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Bryce C. Alstead
Phone (775) 327-3067
balstead@hollandhart.com

October 31, 2016

Via Electronic Filing

Breanne Potter
Commission Secretary
Public Utilities Commission of Nevada
1150 E. William Street
Carson City, NV 89701

RE: Docket No. 16-01032. Application of ORNI 43 LLC for authority to construct a 230 kV transmission line and associated facilities, including a 24 MW geothermal energy generating facility located in Churchill County, Nevada under the Utility Environmental Protection Act

Dear Ms. Potter:

Accompanying this letter, for filing with the Public Utilities Commission of Nevada (the "Commission") and pursuant to the Nevada Utility Environmental Protection Act ("UEPA"), is the Application of ORNI 43 LLC ("Applicant") for authority to construct a 230-kV transmission line and associated facilities, including a 24 MW geothermal energy generating facility located in Churchill County, Nevada. Enclosed with this filing are: the Application, Exhibits 1-10 to the Application, including the required Proof of Publication of Public Notice, and a Draft Notice.

Please contact me at (775) 327-3067 if you have any questions or require additional information.

Very truly yours,

Bryce C. Alstead
for HOLLAND & HART LLP

BCA/bcs
Enclosures

APPLICATION OF ORNI 43 LLC FOR AUTHORITY TO CONSTRUCT A 230-KV TRANSMISSION LINE AND ASSOCIATED FACILITIES, INCLUDING A 24 MW GEOTHERMAL ENERGY GENERATING FACILITY LOCATED IN CHURCHILL COUNTY, NEVADA UNDER THE UTILITY ENVIRONMENTAL PROTECTION ACT

DOCKET NO. 16-01032

VOLUME 1 OF 2

PUBLIC UTILITIES COMMISSION OF NEVADA
DRAFT NOTICE

Pursuant to Nevada Administrative Code ("NAC") 703.162, the Commission requires that a draft notice be included with all applications, tariff filings, complaints and petitions. Please complete and include **ONE COPY** of this form with your filing. (Completion of this form may require the use of more than one page.)

A title that generally describes the relief requested (see NAC 703.160(4)(a)):

> Application of ORNI 43 LLC for authority to construct a 230-kV transmission line and associated facilities, including a 24 MW geothermal energy generating facility and related improvements located in Churchill County, Nevada under the Utility Environmental Protection Act

The name of the applicant, complainant, petitioner or the name of the agent for the applicant, complainant or petitioner (see NAC 703.160(4)(b)):

> ORNI 43 LLC (Applicant)

A brief description of the purpose of the filing or proceeding, including, without limitation, a clear and concise introductory statement that summarizes the relief requested or the type of proceeding schedules **AND** the effect of the relief or proceeding upon consumers (see NAC 703.160(4)(c)):

> Applicant, pursuant to the Utility Environmental Protection Act ("UEPA"), is seeking approval from the Public Utilities Commission of Nevada to construct a utility facility that includes a 230 kilovolt ("kV") generation-tie transmission line and associated facilities located primarily on federal lands in eastern Churchill County, Nevada (the "Tungsten Project").
>
> The Tungsten Project includes an approximately 16.5 mile long 230 kV generation-tie transmission line connecting a 24 MW geothermal energy generating facility to the electric transmission grid at the proposed Alpine Substation. An environmental review of the Tungsten Project has been conducted under the National Environmental Policy Act, 42 U.S.C. § 4321, et seq. An environmental assessment ("EA") has been prepared by the U.S. Bureau of Land Management following the conclusion of an environmental review process, and the final EA is attached as an exhibit to the Application.

A statement indicating whether a consumer session is required to be held pursuant to Nevada Revised Statute ("NRS") 704.069(1)[1]:

A consumer session is not required under NRS 704.069(1).

If the draft notice pertains to a tariff filing, please include the tariff number **AND** the section number(s) or schedule number(s) being revised.

Not applicable.

[1] NRS 704.069 states in pertinent part:

1. The Commission shall conduct a consumer session to solicit comments from the public in any matter pending before the Commission pursuant to NRS 704.061 to 704.110 inclusive, in which:

(a) A public utility has filed a general rate application, an application to recover the increased cost of purchased fuel, purchased power, or natural gas purchased for resale or an application to clear its deferred accounts; and

(b) The changes proposed in the application will result in an increase in annual gross operating revenue, as certified by the applicant, in an amount that will exceed $50,000 or 10 percent of the applicant's annual gross operating revenue, whichever is less.

Application of ORNI 43 LLC for authority to construct a 230 kV transmission line and associated facilities, including a 24 MW geothermal energy generating facility located in Churchill County, Nevada under the Utility Environmental Protection Act	Docket No. 16-01032

APPLICATION OF ORNI 43 LLC FOR AUTHORITY TO CONSTRUCT A 230-KV TRANSMISSION LINE AND ASSOCIATED FACILITIES, INCLUDING A 24 MW GEOTHERMAL ENERGY GENERATING FACILITY LOCATED IN CHURCHILL COUNTY, NEVADA UNDER THE UTILITY ENVIRONMENTAL PROTECTION ACT

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BEFORE THE PUBLIC UTILITIES COMMISSION OF NEVADA

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APPLICATION OF ORNI 43 LLC FOR AUTHORITY TO CONSTRUCT A 230-KV TRANSMISSION LINE AND ASSOCIATED FACILITIES, INCLUDING A 24 MW GEOTHERMAL ENERGY GENERATING FACILITY LOCATED IN CHURCHILL COUNTY, NEVADA UNDER THE UTILITY ENVIRONMENTAL PROTECTION ACT

I. Introduction

Pursuant to the Nevada Utility Environmental Protection Act ("UEPA"), Sections 704.820 to 704.900 of the Nevada Revised Statutes ("NRS"), and Sections 703.415 to 703.427 of the Nevada Administrative Code ("NAC"), ORNI 43 LLC ("Applicant") hereby submits to the Public Utilities Commission of Nevada ("Commission") this Application[1] for authority to construct an approximately 16.5 mile long 230-kV transmission line and associated facilities, including a 24 MW gross (20 MW net) geothermal energy generating facility ("Tungsten"), well field, substation improvements, and associated generating and transmission improvements.[2] The approximately 16.5 mile long 230-kV transmission and communications line and the related transmission and communication facilities are referenced herein as the "Gen-Tie Line." The Gen-Tie Line, Tungsten, substation improvements, and associated well field and other improvements are collectively referenced herein as the "Tungsten Project" or "Project."

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[1] Pursuant to NAC 403.421, on January 29, 2016, Applicant submitted its Notice of its application to a federal agency for approval to construct the Tungsten Project. This Application is the application referenced in the Notice.

[2] Tungsten is planned to be a one-phase 24 MW project. Applicant's EA covered the possibility of a two-phase project in the event that the geothermal resource may support an additional plant. This is similar to how Ormat Nevada, Inc.'s subsidiaries have addressed prior applications related to geothermal facilities. *See* Docket No. 11-04014, (McGinness Hills I) and Docket No. 14-01032 (McGinness Hills II). Even if Tungsten becomes a two-phase 48 MW project in the future, the total generation capacity would not meet the 70 MW threshold for UEPA regulation. However, if a second phase is sought, Applicant will seek a separate UEPA Permit for any new transmission improvements that qualify as a utility facility under NRS 704.860(2).

The Project would be located near in the Tungsten Mountain Geothermal Area in eastern Churchill County, approximately 55 miles east-northeast of Fallon, and north of Highway 50. While the generating facilities associated with the Tungsten Project do not meet the 70 MW threshold for UEPA regulation, the 230-kV voltage of the Gen-Tie Line qualifies it as an "utility facility" as defined by NRS 704.860(2). Accordingly, the Applicant is submitting this Application pursuant to NRS 704.870(1).[3]

II. Information Regarding the Application

Applicant is a Delaware limited liability company qualified to do business in Nevada. Applicant's corporate headquarters and principal place of business is 6225 Neil Road, Reno, Nevada 89511. Applicant is an affiliate of Ormat Nevada, Inc.

All correspondence related to this Application should be sent to the undersigned:

Kyle Snyder
Ormat Nevada, Inc.
6225 Neil Road
Reno, Nevada 89511
Telephone: (775) 356-9029
Email: rpeterson@ormat.com
Email: ksnyder@ormat.com

and

Fred Schmidt
Bryce C. Alstead
Brandon C. Sendall
Holland & Hart LLP
5441 Kietzke Lane, Second Floor
Reno, NV 89511
fjschmidt@hollandhart.com
balstead@hollandhart.com
bcsendall@hollandhart.com

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[3] Pursuant to NAC 703.423(2)(c), although the generating facilities of the Tungsten Project would not independently qualify as a "utility facility" for UEPA purposes, the remainder of the Tungsten Project will also be described in this Application.

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III. Information Required Pursuant to NAC 703.423

A. NAC 703.423(1). Description of Location

1. NAC 703.423(1)(a). A general description of the location of the proposed utility facility including a regional map that identifies the location of the proposed utility facility.

The utility facility Applicant is proposing to construct, operate and maintain is an approximately 16.5 mile long 230-kV overhead monopole transmission line located within Churchill County. More specifically, the utility facility will be located in the Tungsten Mountain Geothermal Area in eastern Churchill County approximately 55 miles east-northeast of Fallon, and north of Highway 50. *See* Tungsten Project Vicinity Map, attached hereto as **Exhibit 1**.

The Gen-Tie Line is proposed to be located along an approximately 16.5 mile stretch of land running generally southwest from the proposed geothermal energy generating facility, and terminating at the planned Alpine switching station ("Alpine Switching Station"). More specifically, the Gen-Tie Line is proposed to run from 39°40'03.94"N, 117°41'20.84"W to 39°28'19.01"N, 117°49'20.28"W within Churchill County. *See* Proposed Gen-Tie Line Map, attached hereto as **Exhibit 2**.

The Alpine Switching Station is proposed to be located on the existing NV Energy line #2309. The Alpine Switching Station will act as the line fold for line #2309 and will be the termination point for the Gen-Tie Line. The Alpine Switching Station will consist of three (3) 230 kV circuit breakers and associated switches, footings and framework, two (2) 230 kV A frame line dead-end structures, two (2) 230 kV line switches and associated support structures, two (2) 230 kV station service voltage transformers, associated fiber optic cable infrastructure to provide communications to the switching station, and related control building and fencing. To facilitate the interconnection with the Gen-Tie Line, five (5) new 230-kV steel three-pole dead-end structures and one new 230 kV steel single pole switch structure will be installed, with the Gen-Tie Line terminating at one of the three-pole dead-end structures just northeast of the Alpine Switching Station. Design characteristics of the Gen-Tie Line, the Tungsten generating facility, and the Alpine Switching Station can be found in Tables 1, 2, and 3 below.

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2. **NAC 703.423(1)(b). A legal description of the site of the proposed utility facility, with the exception of electric lines, gas transmission lines, and water and wastewater lines, for which only a detailed description is required.**

As noted above, the Project will be located in the Tungsten Mountain Geothermal Area in eastern Churchill County approximately 55 miles east-northeast of Fallon, and north of Highway 50. The Gen-Tie Line is proposed to be located along an approximately 16.5 mile stretch of land running generally southwest from the proposed geothermal energy generating facility to the planned Alpine Switching Station.

The Tungsten Project will be generally located in the following locations within Churchill County:

- T. 19 N., R. 37 E., (Sections 4, 9, 16, 21, 28, 33)
- T. 20 N., E. 37 E., (Sections 13, 23, 24, 26, 27, 33, 34)
- T. 20 N., R. 38. E., (Sections 4, 5, 7, 8, 18)
- T. 21 N., R. 38. E., (Sections 22, 27, 28, 33, 34).

See Legal Description, attached hereto as **Exhibit 3**. The proposed footprint of the 24 MW generating facility is 9 acres,[4] the proposed footprint of the Alpine Switching Station is approximately 9 acres, and the proposed temporary disturbance for the Gen-Tie Line is approximately 366 acres. The overall site disturbance associated with the Tungsten Project, including temporary construction disturbances and ancillary facilities, is anticipated to be approximately 517 acres in the aggregate.[5]

3. **NAC 703.423(1)(c). Appropriately scaled site plan drawings of the proposed utility facility, vicinity maps and routing maps.**

The vicinity map and routing map for the Tungsten Project can be found in **Exhibits 1** and **2** of this Application. Scaled site plan drawings for the Gen-Tie Line are attached hereto as **Exhibit 4**, and scaled site plan drawings for the Tungsten generating facility are attached hereto

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[4] The generating facilities were permitted up to 15 acres under Section 2.1.3 and Table 2 of the Environmental Assessment, however, the site license Applicant submitted to the BLM is for nine acres or less. Additionally, while the final footprint of the 24 MW generating facility is only 9 acres, the temporary disturbance for construction activities and footprint of the related well pads and pipelines will be larger. *See* Section III(G)(2)(v), below.

[5] As discussed in more detail later in this Application, Applicant does not anticipate that 517 acres will be disturbed at any given time; rather, this figure represents the total land disturbance associated with all construction activities related to the Project.

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as **Exhibit 5**. Finally, scaled site plan drawings and routing maps for the planned Alpine Switching Station are attached hereto as **Exhibit 6**.

B. NAC 703.423(2). Description of the Facility.

1. NAC 703.423(2)(a). The size and nature of the proposed utility facility.

The Gen-Tie Line is proposed as a 230-kV overhead transmission line and fiber optic line that will be approximately 16.5 miles long, connecting the generating facility to the Alpine Switching Station. Design characteristics of the Gen-Tie Line can be found below in Table 1.

Table 1. Design Characteristics of the Gen-Tie Line Portion of the Project

Line Length	Approximately 16.5 miles total.
Type of Structure	149 Self-Weathering Steel Monopoles, direct embedded
Structure Height	81.5 to 99.5 feet above ground line
Span Length	Average ~ 580 ft
Number of structures	One hundred and forty nine (149) structures total
Structure Base	Direct embedded.
Conductor Types	795 MCM 45/7 non-specular ACSR "Tern" cable
Clearance of Conductor	Minimum 25 feet above the ground line
Access Roads	Existing roads would be utilized whenever possible to access the line. In those areas where no access roads currently exist, Applicant would utilize overland travel on existing BLM leases to access the line. No permanent new access roads are necessary for the operation of the Gen-Tie Line.
Voltage	230 kV

The generating facility portion of the Project will be a 24 MW (nameplate) geothermal energy generating facility located on approximately 9 acres of land. It will be located within the

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Tungsten Mountain Geothermal Unit (BLM NVN-88836X), which includes federal geothermal leases N-85715, N-86897, N-86898, N-88428, N-90744, and N-92480.

Table 2. Design Characteristics of the Tungsten generating facility

Process Design	Ormat Integrated 2-level Unit (ITLU) consisting of two parallel two-level Ormat Energy Converters (OECs).
Major Components	Preheaters, vaporizers, organic turbines, synchronous generators, recuperators, air-cooled condensers, motive fluid pumps, switchgear and controls, control building, fire detection and suppression systems, step-up/step-down transformer, protective relays, and generation meters.
Geothermal Wells	Tungsten will require four production wells and three injection wells. All of the production and injection wells will be sited on BLM geothermal leases.
Maximum Output	28.195 MW Net
Average Output	24 MW
Total Surface Disturbance for Tungsten Generating Facility	9 acres
Total Anticipated Surface Disturbance for Construction of All New Facilities Associated with Tungsten Generating Facility	Approximately 87 acres

The Alpine Switching Station is proposed to be located on the existing NV Energy line #2309, will act as the line fold for line #2309, and will be the termination point for the Gen-Tie Line. Design characteristics of the Alpine Switching Station can be found below in Table 3.

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Table 3. Design Characteristics of the Alpine Switching Station

Station Footprint	Fenced area of 400' by 450' using an 8.5 foot tall chain-link fence with three-strand barbed wire
New Pole Structures	Five 230-kV steel three-pole dead-end structures, and one 230-kV steel single pole switch structure
Structure Height	65.5 to 52 feet above ground line
Switching Station Features	Three 230-kV circuit breakers and associate switches, footings and framework; Two 230-kV A frame line dead-end structures; Two 230-kV station service voltage transformers. *See* Ex. 6.
Communications	Single overhead ground wire/fiber optic cable dedicated for use at the facility; 435 feet of 4" diameter PVC conduit buried 36" below ground with fiber optic cable from Alpine Switching Station to the point of interconnection
Control Building	Approximately 1400 square feet
Access Road	a 20-foot wide dirt access road from Alpine Road will be constructed to just beyond the switching station over a total distance of approximately 2500 feet. The road will be engineered and compacted to facilitate heavy equipment traffic and provide adequate drainage.

2. NAC 703.423(2)(b). The natural resources that will be used during construction and operation of the utility facility.

The only natural resource that Applicant needs to use for the construction and operation of the Project is water. Construction water will be necessary for stabilizing soils and to control fugitive dust during the grading process. Construction water will either be trucked in from a private source to each applicable construction site, or construction water will be obtained from a

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shallow water well at one or more of the BLM-approved drill sites. Geothermal fluid may also be used to provide construction water where appropriate.

Applicant estimates that approximately 50,000 gallons per day ("gpd") of water will be used during the first two (2) months of construction, and approximately 5,000 gpd for the following six (6) months. Once grading and construction is completed, Applicant anticipates needing to use roughly 325 gallons of water per day for septic purposes.[6] This water will be obtained from the same sources identified above, and will be trucked in to the facilities and stored onsite. Because the Tungsten Project will be an air-cooled power plant, no water (or other natural resources) will be necessary for the operation of the facility. No other natural resources will be necessary for the operation of the Project.

3. NAC 703.423(2)(c) and (d). The layout diagrams of the structures at the proposed utility facility.

Layout diagrams for the Gen-Tie Line are attached hereto at **Exhibit 4**, layout diagrams for Tungsten are attached hereto at **Exhibit 5**, and layout diagrams for the Alpine Switching Station are attached hereto at **Exhibit 6**.

4. NAC 703.423(2)(c) and (d). The scaled diagrams of the structures at the proposed utility facility.

Scaled drawings for the Gen-Tie Line are attached hereto at **Exhibit 4**, scaled site plan drawings for Tungsten are attached hereto at **Exhibit 5**, and scaled site plan drawings for the Alpine Switching Station are attached hereto at **Exhibit 6**.

5. NAC 703.423(2)(e). A statement concerning whether the proposed utility facility is an electrical generating plant or the associated facilities of an electric generating plant that uses renewable energy as its primary source of energy to generate electricity.

The Tungsten Project includes three components. The Gen-Tie Line portion of the Project is the only portion of the Project that qualifies as a "utility facility" under NRS 704.860(2). The Gen-Tie Line is collectively the associated transmission and communications facilities of the Tungsten facility, which is an electrical generating plant using renewable

[6] Applicant intends to purchase drinking water during operations from a commercial bottled water supplier.

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geothermal energy as its primary source of energy to generate electricity. The Gen-Tie Line will tie into the Alpine Switching Station.

C. NAC 703.423(3). Environmental Studies.

A copy of the Environmental Assessment ("EA") that the BLM issued in connection with its approval of the Tungsten Project is attached to this Application as **Exhibit 7**.[7] The environmental studies conducted by the BLM in connection with the EA ultimately resulted in the conclusion that the construction and operation of the Project would not significantly impact the quality of the human environment and that an Environmental Impact Statement (EIS) was not required for the Project. *See* Finding of No Significant Impact ("FONSI"), attached hereto as **Exhibit 8**, at § 1.1. Specifically, the BLM found it is unlikely that the Project would result in any measurable impacts to the general public's health or safety. *Id.* at § 2, .

D. NAC 703.423(4). Reasonable Alternative Locations.

Aside from the "Option 1" and "Option 2" routes for the Gen-Tie Line, no other reasonable alternatives were identified.[8] Geothermal resources are naturally occurring phenomena and thus site specific; generating facilities must be located close to these sources (which, in turn, minimizes environmental impacts and disturbances). The proposed route of the Gen-Tie Line is the most direct commercially reasonable route from the generation facility, and this route runs along the existing county road to the point of interconnection with the proposed Alpine Switching Station. No other alternatives were identified regarding the location of the

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[7] Applicant has included the full EA, with Appendices A, B, C, and E. Appendix D of the EA is the Bird and Bat Conservation Strategy (BBCS), which Applicant has omitted from this filing because it is approximately 400 pages long. Applicant can provide this document if requested. Applicant inadvertently overlooked filing this Application immediately after the EA was released by the BLM; however, as described within Appendix E of the EA and pursuant to the thorough State Clearinghouse noticing process under UEPA statutes, Applicant submits that all necessary parties and agencies have been afforded ample notice to participate in the BLM and UEPA process, and any delay is harmless. *See* Docket No. 12-06019 (Commission approval of a UEPA Application when the initial notice filing was filed approximately three months after a Final Environment Impact Statement (FEIS) was released and the amended application was filed approximately 6 weeks after the initial notice filing); *see also* Docket No. 12-04013 (Commission approval of a UEPA Application when the amended application was filed over two months after a Final EA was released).

[8] Exhibit 7, at § 2.2.

Alpine Switching Station since it must be located adjacent to the existing NV Energy transmission line #2309.

E. NAC 703.423(5). Proof of Public Notice and proof of the publication of the public notice, as required by subsection 4 of NRS 704.870.

A copy of the Proof of Public Notice and Proof of Publication are attached hereto as **Exhibit 9**.

F. NAC 703.423(6). Proof of Service to the Nevada State Clearinghouse.

A copy of this Application has been submitted to, among others, the Regulatory Operations Staff of the Commission, the Bureau of Consumer Protection, and the Nevada State Clearinghouse. *See* Certificate of Service to this Application.

G. NAC 703.423(7). Probable Effect on Environment.

1. **NAC 703.423(7)(a). A reference to any studies, if applicable.**

Please see the BLM's Final EA, attached hereto as Exhibit 7.

2. **NAC 703.423(7)(b). An environmental statement that includes:**

i. *The name, qualifications, professions and contact information for each person with primary responsibility for the preparation of the environmental statement.*

A list of preparers and reviewers of the environmental statement can be found in the EA for the Tungsten Project (Exhibit 7) at Section 5.1. The following is the contact information for the lead and cooperating agencies that prepared the EA:

BLM
Carson City District, Stillwater Field Office
5665 Morgan Mill Road
Carson City, NV 89701
Phone: (775) 885-6000

Altman Environmental Consulting (AEC)
Heather Altman
P.O. Box 3825
Seal Beach, CA 90740
Phone: (562) 433-4741

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Environmental Management Associates (EMA)
Dwight Carey
588 Explorer Street
Brea, CA 92821
Phone: (714) 529-3695

Stantec Consulting Services, Inc.
Kristi Schaff
6995 Sierra Center Parkway
Reno, NV 89511
(775) 850-0777

Cardno ENTRIX
Benjamin Orcutt
5252 Westchester Street, Suite 250
Houston, TX 77005

ii. *The name, qualifications, professions and contact information for each person who has provided comments or input in the preparation of the environmental statement.*

On December 22, 2015, the BLM sent out nine (9) letters and e-mails to specific organizations and agencies, in addition to notification to 95 State and Federal offices through the Nevada State Clearinghouse that contained a brief description of the Tungsten Project. The BLM's Carson City District also published a news release on the same day that was sent to media outlets listed on the Nevada BLM State Office media list. Coordination with the Fallon Paiute-Shoshone Tribe initiated back in 2011 during the proposal for geothermal exploration activities in the Tungsten Mountain Project Area, and continued with the current proposal in 2015. This coordination included face-to-face meetings in April 2011, March 2015, April 2015, June 2015, September 2015, and November 2015, as well as two site visits in 2011 and 2015 with the Fallon Paiute-Shoshone Tribe's Cultural Committee Coordinators and the Cultural Committee Chair.[9]

A total of eight (8) responses were received from the following groups: the U.S. Environmental Protection Agency, the Navy (Naval Air Station Fallon), the Nevada State Land Use Planning Agency, the Nevada State Historic Preservation Office (SHPO), the Nevada

[9] Applicant's and the BLM's coordination with the Fallon Paiute-Shoshone Tribe is ongoing, but to date, no traditional cultural properties or sacred sites have been identified within the Project Area. *See* Exh. 7, Appendix E.

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Division of Water Resources, the Nevada Department of Wildlife, the Nevada Department of Environmental Protection (NDEP) – Bureau of Safe Drinking Water and NDEP – Bureau of Air Pollution Control. *See* Exhibit 7, at Section 1.7. The comments submitted and the mitigation measures and other responses to address each of the comments are located in Appendix E of the EA. *Id.*, at Appendix E. Applicant does not have the name, qualifications, professions and contact information for each of the individuals that submitted comments beyond the information contained within Appendix E to the EA. The BLM also invited the Fallon Paiute-Shoshone Tribe and other government entities to participate as cooperating agencies. The entities that participated can be found in Section 6.1 of the EA. Applicant does not have the name, qualifications, professions and contact information for these cooperating agencies.

iii. *A bibliography of materials used in the preparation of the environmental statement.*

A complete bibliography of materials used in preparation of the EA can be found in Section 7 of the EA at pp. 99-100.

iv. *A description of the environmental characteristics of the project area existing at the time the application is filed with the Commission.*

The Project area lies within the Tungsten Mountain Geothermal Unit in Churchill County, approximately 36 miles west of Austin. The area is generally located on the northwestern side of Edwards Creek Valley, which includes a large dry lake bed, or playa. The Project area is surrounded by the Clan Alpine Mountains to the northeast, the Desatoya Mountains to the southeast, and the New Pass Mountains to the east. The Project will be located along the foothills of the Clan Alpine Mountains above the playa surface of Edwards Creek Valley. Elevations of the Project range from approximately 5,200 feet to 5,700 feet above mean sea level (amsl).

The BLM provided a detailed description of the environmental characteristics of the Project area, as it existed in 2015, in Section 3 of the EA. *See* Exhibit 7, at pp. 27-77. The environmental characteristics of the Project area have not materially changed since the EA was released.

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v. *A description of the environmental impacts that the construction and operation of the proposed utility facility will have on the project area before mitigation.*

The construction and operation of the Project will have a minimal impact on the Project area. The BLM has determined that the construction and operation of the Project will not have a significant environmental impact. *See* Exhibit 7. Potentially affected natural resources and other issues were evaluated by the BLM during its environmental review. *See* Exhibit 7, at Sections 3 and 4; Tables 3 and 4. Studies of these resources and an impact analysis were conducted, and mitigation measures and design parameters were developed to offset any material impact. *See* Exhibit 7, at Section 2.1.11 (Applicant's Adopted Protection Measures) and Appendix C.

The construction of the Gen-Tie Line portion of the Project will result in the temporary disturbance of approximately 366 acres of land; however, once constructed, the Gen-Tie Line portion of the Project will only account for a disturbance of approximately seven (7) acres of land. The operation of the Gen-Tie Line portion of the Project will be limited to periodic inspection and maintenance activity that is not anticipated to create additional disturbances.

The construction of the Tungsten portion of the portion of the Project (including its ancillary facilities such as well pads and pipelines) will result in the temporary disturbance of approximately 143 acres of land.[10] Once constructed, the Tungsten portion of the Project will be limited to a surface disturbance of approximately 95 acres for the generating facility, well pads, and pipelines. Notably, Tungsten will not require significant quantities of post-construction water resources because it is an air-cooled facility. Outside of periodic maintenance, Applicant does not anticipate the creation of additional disturbances during the operation of the Tungsten portion of the Project.

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[10] *See* Exhibit 7, at Table 2.

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vi. *A description of the environmental impacts that the construction and operation of the proposed utility facility will have on the project area after mitigation.*

The BLM has provided mitigation factors and plans that Applicant must follow during the construction and operation of the Project, including specific monitoring and mitigation plans. *See* Exhibit 7, at Sections 2.1.11, 4.9, and Appendix C. The BLM concluded that as long as the stated mitigation measures are implemented, the Project will have no significant impact on the environment. *See* Exhibit 8, at 1.

H. NAC 703.423(8)(a). An explanation of the extent to which the proposed utility facility is needed to ensure reliable utility service to customers in this state, including: if the proposed utility facility was approved in a resource plan, a reference to the previous approval by the Commission.

Pursuant to NRS 704.890(1)(b), the Tungsten Project is exempt from this requirement. Applicant has not yet finalized whether the Tungsten Project's output will be sold to a Nevada utility or out of state, and the Project has not been approved in a prior resource plan. To the extent the output from the Tungsten Project were to be sold to a Nevada utility, it would provide consistent, reliable renewable energy to the customers in this state. But again, it remains uncertain at this time whether the output of the Tungsten Project will be sold to a Nevada utility or out of state.

I. NAC 703.423(9). An explanation of how the need for the proposed utility facility as described in subsection eight balances any adverse effects on the environment as described in subsection 7.

As described in the EA and in Section II(G)(vi) above, the BLM has concluded that the Project will have no significant impact on the environment as long as the recommended/stated mitigation measures are implemented. *See* Exhibit 8 at page 1. In light of the BLM's finding that the Project will not significantly impact the environment, Applicant submits that the Project would yield an overall net benefit to this State due to the economic benefits related to the Project (including the creation of over 50 construction jobs and 1-2 onsite jobs[11] during operations),

[11] This estimate is on a Full-Time Employee basis. There will be more than 1-2 on-site operational employees, though the Applicant only expects 1-2 employees to be on-site at any given time.

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additional tax revenue for Churchill County and the State, and the continued expansion of renewable energy generation within the State.

J. NAC 703.423(10). Explanation of Minimum Adverse Impact on Environment

An explanation of how the proposed utility facility represents the minimum adverse effect on the environment, including:

a. **NAC 703.423(10)(a). The state of available technology.**

The Tungsten portion of the Project is designed to be a state of the art geothermal energy generating facility using the most advanced Ormat Energy Converters ("OECs") to convert geothermal heat into renewable energy. The environmental impacts of the Project will be generally typical of utility-scale geothermal power plants; however, in contrast to many other geothermal facilities, because Tungsten will be an air-cooled facility, no water resources will be required for operations. Tungsten will meet all applicable laws, regulations, and codes. *See* Exhibit 8, at Section 10. Applicant is not requesting any variances from applicable law in constructing the Tungsten portion of the Project.

The Gen-Tie Line portion of the Project is designed to use similar characteristics and technology as other transmission lines that have been constructed and operated in Nevada. The Gen-Tie Line has been designed to meet all temperature, wind, voltage, span and structure clearance requirements imposed by applicable law. *See* Exhibit 7, at Section 2.1.4.1; *see also* Table 1 and Exhibit 4 of this Application. Similarly, the Alpine Switching Station is designed to use similar characteristics and technology as other switching stations that have been recently constructed and operated in Nevada. Applicant is not requesting any variances from applicable law in constructing the Gen-Tie Line portion of the Project or Alpine Switching Station.

b. **NAC 703.423(10)(b). The nature of various alternatives.**

Please see response in Section III(D), above, regarding various alternatives studied.

c. **NAC 703.423(10)(c). The economics of various alternatives.**

Please see response in Section III(D), *above*, regarding various alternatives studied. As noted within Section III(D) and Section III(G)(2)(iv), the Gen-Tie Line runs along the foothills of the Clan Alpine Mountains above the playa surface of Edwards Creek Valley. Other

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alternative routes are both physically and economically prohibitive and were therefore not seriously considered.

K. NAC 703.423(11). Explanation on Location Conforming to State and Local Laws.

a. **NAC 703.423(11)(a). A list of all permits, licenses and approvals the applicant has obtained including copies thereof.**

A listing of, and copies of, all permits, licenses, and approvals obtained by Applicant in connection with the Project, to date, are attached hereto as **Exhibit 10**. Please note that the applicability of state and local laws is limited because the Project is located primarily on federal lands.[12]

b. **NAC 703.423(11)(b). A list of all permits, licenses and approvals the applicant is in the process of obtaining to commence construction of the proposed utility facility. The applicant must provide an estimated timeline for obtaining these permits, licenses and approvals.**

A matrix of all permits, licenses, and approvals necessary to construct and operate the Gen-Tie Line and Tungsten that Applicant is in the process of obtaining, and Applicant's estimated timeline for obtaining such permits, licenses, and approvals, are located in Tables 4 and 5, below. As previously noted, the applicability of state and local laws is limited because the Project is located primarily on federal lands.

Table 4. Permits Necessary for the Gen-Tie Line:

Permit Title	Agency Name	Approval Date	Expected Approval Date
Federal (Construction)			
Utilization EA	BLM - Carson City	3/25/2016	
Transmission Line ROW Grant[13]	BLM - Carson City	9/1/2016	
Site License	BLM - Carson City		11/1/2016
Facility Construction Permit	BLM - Carson City		2/1/2017

[12] As noted within the EA, only roughly one-half mile (anticipated to be 3,284 feet) of the 16.5 mile long Gen-Tie Line would be on private lands, with the remainder of the Gen-Tie Line on BLM lands. Exh. 7, § 2.1.4.

[13] Separate Right-of-Way ("ROW") grants were sought for the Gen-Tie Line and the Alpine Switching Station, copies of which are included within Exhibit 10 of this Application. Aside from the separate ROW approval, the Alpine Switching Station will not require any permits or approvals beyond those that will be required in connection with the Gen-Tie Line.

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State (Construction)			
Class II Air Quality ("AQ") Surface Area Disturbance Permit	Nevada Division of Environmental Protection ("NDEP") Bureau of Air Pollution Control ("BAPC")	8/15/2016	
Local (Construction)			
Special Use Permit	Churchill County	8/24/2016	

Table 5. Permits Necessary for Tungsten:

Permit Title	Agency Name	Approval Date	Expected Approval Date
Federal (Construction)			
Plan of Operations	BLM - Carson City	3/28/2012	
Exploration EA	BLM - Carson City	3/28/2012	
Plan of Utilization	BLM - Carson City	3/25/2016	
Plan of Development	BLM - Carson City	9/1/2016	
Utilization EA	BLM - Carson City	3/25/2016	
Geothermal Drilling Permit 45A-22[14]	BLM – Carson City	12/15/2015	
Geothermal Drilling Permit 56-22	BLM – Carson City	4/3/2014	
Geothermal Drilling Permit 56A-22	BLM – Carson City	4/22/2016	
Geothermal Drilling Permit 75A-22	BLM – Carson City	8/29/2016	
Geothermal Drilling Permit 75B-22	BLM – Carson City	10/21/2016	
Geothermal Drilling Permit 84A-22	BLM – Carson City	1/21/2016	
Geothermal Drilling Permit 84B-22	BLM – Carson City	5/2/2016	
Geothermal Drilling Permit 84C-22	BLM – Carson City	8/29/2016	
Site License	BLM - Carson City		11/1/2016
Facility Construction Permit	BLM - Carson City		2/1/2017
Federal (Operating)			
Commercial Use Permit	BLM - Carson City		10/1/2017
Contract for Sale of Minerals	BLM - Carson City		11/15/2016
Qualifying Small Generator	Federal Energy Regulatory Commission		10/1/2017
State (Construction)			
CAPP Permit to Construct	Nevada Division of Environmental Protection ("NDEP") Bureau of Air Pollution Control ("BAPC")		1/1/2017
Class II AQ Surface Area Disturbance Permit (construction)	NDEP BAPC	8/15/2016	
Construction Stormwater Permit (Notice of Intent)	NDEP Bureau of Water Pollution Control ("BWPC")		11/15/2016
Underground Injection Control (UIC) Program Permit	NDEP BWPC		7/1/2017
On-Site Sewage Disposal (General) Permit	NDEP BWPC		6/1/2017

[14] The BLM well drilling permits listed here represent the BLM well sites that Applicant believes will be necessary for the operations of Tungsten; however, additional BLM well drilling permits may be required as Tungsten is developed and more is known about the specifics of the geothermal resource.

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State Fire Marshall Building Permit	Nevada State Fire Marshal		1/1/2017
Boiler Pressure Vessel Permits - Installation	Nevada Division of Industrial Relations		4/1/2017
State (Operating)			
CAPP Permit to Operate	NDEP BAPC		10/1/2017
Class II AQ Permit to Operate	NDEP BAPC		1/1/2017
Hazardous Materials Permit	Nevada State Fire Marshal		8/1/2017
Temporary Water Use Permit	Nevada Division of Water Resources		If needed. 30 days from submittal.
Geothermal Resource Permit 45A-22[15]	Nevada Division of Minerals	12/16/2015	
Geothermal Resource Permit 56-22	Nevada Division of Minerals	4/9/2014	
Geothermal Resource Permit 56A-22	Nevada Division of Minerals	6/3/2016	
Geothermal Resource Permit 75A-22	Nevada Division of Minerals	8/30/2016	
Geothermal Resource Permit 75B-22	Nevada Division of Minerals	10/21/2016	
Geothermal Resource Permit 84A-22	Nevada Division of Minerals	2/16/2016	
Geothermal Resource Permit 84B-22	Nevada Division of Minerals	5/2/2016	
Geothermal Resource Permit 84C-22	Nevada Division of Minerals		11/1/2016
Boiler Pressure Vessel Permits - Operating	Nevada Division of Industrial Relations		8/1/2017
Local (Construction)			
Special use Permit	Churchill County	8/24/2016	
Building Permit(s)	Churchill County		1/1/2017
Septic/ISDS Permit	Churchill County		1/1/2017

L. NAC 703.423(12). Explanation of Public Interest.

a. **NAC 703.423(12)(a). An explanation of the economic benefits that the proposed utility facility will bring to the applicant and this State.**

The Project will result in the creation of construction and operational jobs, and it will also result in additional tax revenues to Churchill County and the State of Nevada. Applicant estimates that approximately 57 Full Time Equivalent ("FTE") jobs will be created during the construction of the Project – approximately 50 FTE jobs created for the construction of Tungsten, and an additional 7 FTE jobs during the construction of the Gen-Tie Line. Additional support personnel, including construction inspectors, surveyors, project managers and environmental inspectors may also be required. Once operational, Tungsten will have a total staff of approximately 20 employees, with 1-2 employees onsite at a given time. Applicant

[15] The NDOM well drilling permits listed here represent the NDOM well sites that Applicant believes will be necessary for the operations of Tungsten; however, additional NDOM well drilling permits may be required as Tungsten is developed and more is known about the specifics of the geothermal resource.

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estimates that the average wage paid to workers on the Project will be approximately $30.00/hour (plus benefits). Applicant anticipates that the majority of these workers will reside in Nevada.

The Project will also generate new tax revenue for both the State of Nevada and Churchill County through sales and use and property taxes. Based on the tax figures for Tungsten, Applicant anticipates that the approximate amount of sales and use taxes that the Project will create is over $1 million. Applicant anticipates that the approximate amount of property taxes that the Project will create is close to $8 million over the operational life of the facility.[16]

b. **NAC 703.423(12)(b). An explanation of the nature of the probable effect on the environment in this State if the proposed utility facility is constructed.**

The EA analyzed the Project and covered all lands associated with the Project. As stated in the EA and FONSI, the Project will not have a significant impact on the environment. Exhibit 6, at Section 2.1, *see also* Exhibit 7. Applicant will construct the Project in accordance with specific monitoring and mitigation plans required by the EA to ensure a minimal impact on the environment. Further, the Project will help advance the displacement of coal and natural gas-fired capacity (and associated greenhouse gas emissions) with clean renewable energy, resulting in improved air quality. Finally, once the Project is constructed it will not use a significant amount of natural resources in operations.

c. **NAC 703.423(12)(c). An explanation of the nature of the probable effect on the public health, safety and welfare of the residents in this State if the proposed utility facility is constructed.**

The Project is not anticipated to have any adverse effects on the health, safety, or welfare of Nevada's residents. Exhibit 7, at § 2 ("It is unlikely that there would be any measurable impacts to the general public's health or safety"). The Project will provide economic benefits, including jobs and revenue, to Nevada's residents and government entities, which should

[16] The initial operational life of Tungsten is anticipated to be twenty (20) years. If re-powers occur, Tungsten's operational life could be much longer than this figure, in which case the property taxes payable by Applicant will be significantly higher.

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improve their overall welfare. Further, the Project will help advance the displacement of coal and natural gas-fired capacity (and associated greenhouse gas emissions) with clean renewable energy, resulting in improved general health conditions due to reduced reliance on fossil fuel-based generation. Accordingly, the Project is unlikely to have any negative impacts on the general public's health, safety and welfare; in fact, the Project will provide economic, health and overall welfare benefits to the residents of this State.

d. **NAC 703.423(12)(d). An explanation of the interstate benefits expected to be achieved by the proposed electric transmission facility in this State, if applicable.**

As noted above in Section III(H), Applicant has not yet finalized whether the Tungsten Project's output will be sold to a Nevada utility or out of state. Regardless, the Project will increase interstate deliverability options for renewable energy generation.

IV. Conclusion

Applicant respectfully requests this Commission to approve this Application and issue a UEPA Permit to Construct for the Tungsten Project. Applicant reserves the right to amend and supplement this Application as permitted and contemplated pursuant to NRS 704.820 to 704.900 and NAC 703.415 to 703.427.

DATED and respectfully submitted this 31st day of October, 2016.

HOLLAND & HART LLP

Fred Schmidt, Esq.
Bryce C. Alstead, Esq.
Brandon C. Sendall, Esq.
5441 Kietzke Lane, Second Floor
Reno, Nevada 89511

Attorneys for Applicant

HOLLAND & HART LLP
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CARSON CITY, NV 89703

PROOF OF SERVICE

I hereby certify that on October 31, 2016 pursuant to NRS 704.870(2), 704.870(3), 704.870(4)(a), and NAC 703.423(6), I caused to be served by Electronic Mail upon the following persons and/or agencies a copy of the Application of ORNI 43 LLC for authority to Construct a 230-kV Transmission Line under the Utility Environmental Protection Act (UEPA).

Nevada State Clearinghouse
Nevada Dept. of Administration
209 E. Musser Street, Room 200
Carson City, NV 89701
nevadaclearinghouse@lands.nv.gov

Tammy Cordova, Staff Counsel
Regulatory Operations Staff
Public Utilities Commission of Nevada
9075 West Diablo Drive, Suite 250
Las Vegas, NV 89148
tcordova@puc.nv.gov
pucn.sc@puc.nv.gov

Eric Witkoski
Office of the Attorney General
Bureau of Consumer Protection
555 E. Washington Avenue, Suite 3900
Las Vegas, NV 89101
bcpserv@ag.nv.gov

Kelly G. Helton
Churchill County Clerk
155 N. Taylor St., Suite 110
Fallon, NV 89406
clerktreas@churchillcounty.org

Dave Emme - Administrator
Nevada Division of Environmental Protection
901 S. Stewart Street, Suite 4001
Carson City, NV 89701
demme@ndep.nv.gov
khoward@ndep.nv.gov

Skip Canfield
Nevada Department of Conservation and Natural Resources
901 S. Stewart Street, Ste. 1003
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scanfield@lands.nv.gov

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CARSON CITY, NV 89703

EXHIBIT 1

Figure 1 : Project Vicinity Map

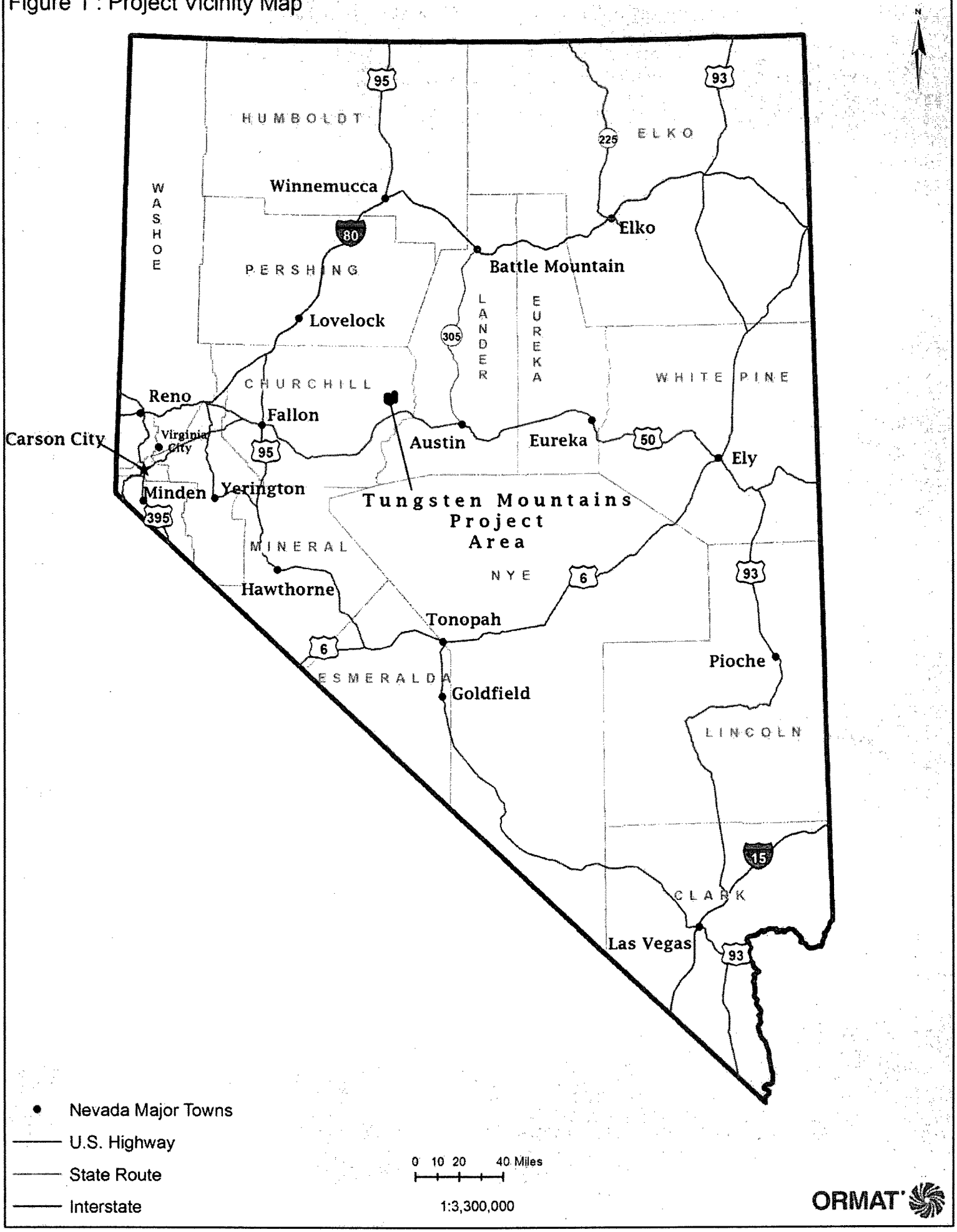

EXHIBIT 2

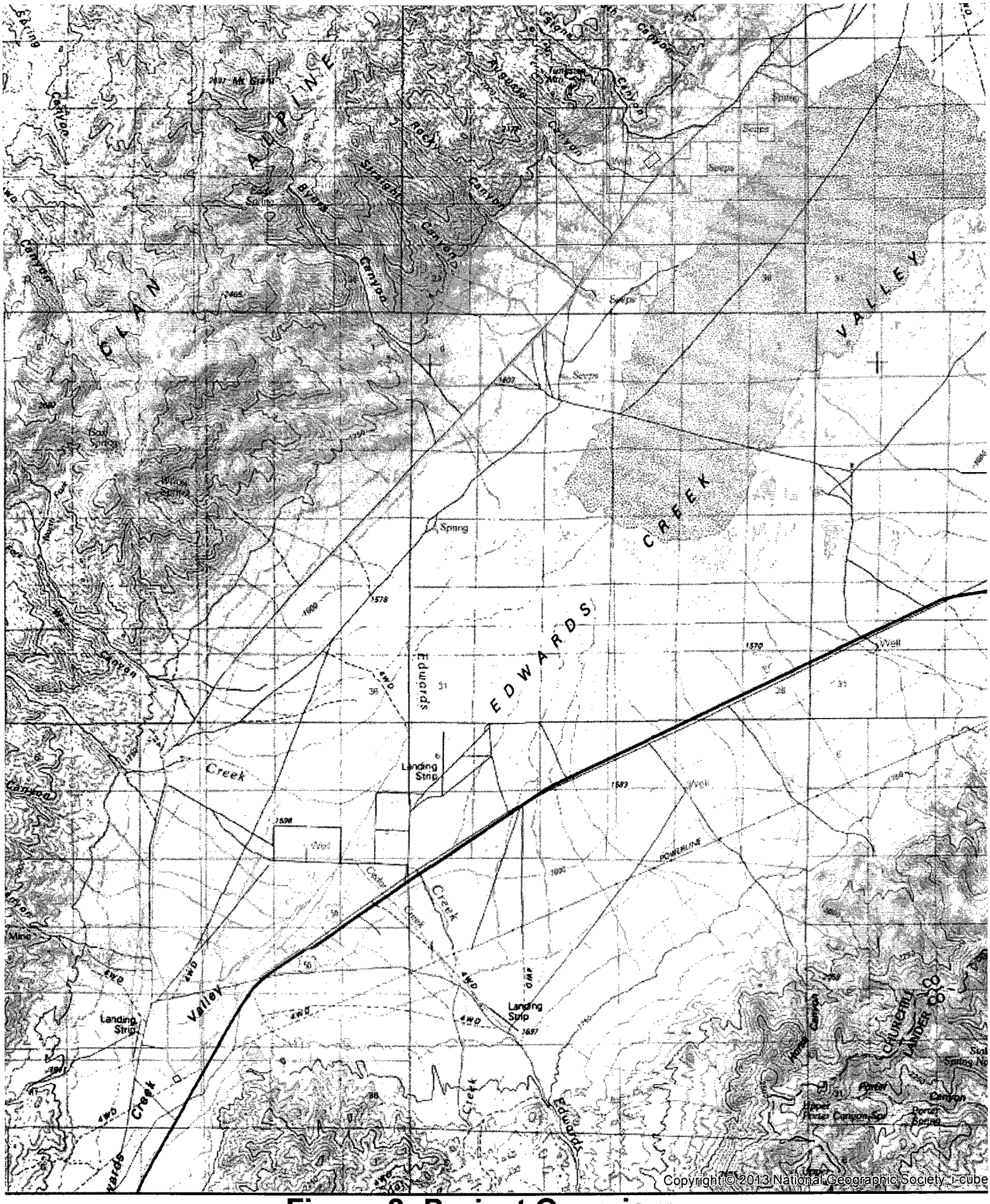

Figure 2: Project Overview
Tungsten Mountain Project

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- Ormat BLM Leases
- Tungsten Plant
- Transmission Line
- Alpine Switching Station

EXHIBIT 3

Project Legal Description

The Project is a linear feature, approximately 16.5 miles long, and originates at the proposed Tungsten generating facility, which is located approximately 55 miles east-northeast of Fallon, NV. and north of Highway 50. The Project generally trends southwest to NV Energy's planned Alpine substation, located on existing NV Energy line #2309.

The Tungsten Project is more particularly described as follows:

T. 19 N., R. 37 E.,
- sec. 4, lots 1 and 2, SE1/4NW1/4, and SE1/4SW1/4;
- sec. 9, E1/2NW1/4, SW1/4NW1/4, N1/2SW1/4, and SW1/4SW1/4;
- sec. 16, W1/2NW1/4 and W1/2SW1/4;
- sec. 21, W1/2NW1/4, SE1/4NW1/4, N1/2SW1/4, SE1/4SW1/4, and SW1/4SE1/4;
- sec. 28, W1/2NE1/4, NE1/4NW1/4, and SE1/4SW1/4;
- sec. 33, W1/2NE1/4, NE1/4NW1/4, N1/2NE1/4, SW1/4NE1/4, SE1/4NW1/4, and NE1/4SW1/4.

T. 20 N., E. 37 E., partly unsurveyed,
- sec. 13, SE1/4NE1/4, SE1/4SW1/4, N1/2SE1/4, and SW1/4SE1/4;
- sec. 23, SE1/4NE1/4, SE1/4SW1/4, N1/2SE1/4, and SW1/4SE1/4;
- sec. 24, N1/2NW1/4 and SW1/4NW1/4;
- sec. 26, N1/2NW1/4 and SW1/4NW1/4;
- sec. 27, SE1/4NE1/4, SE1/4SW1/4, N1/2SE1/4, and SW1/4SE1/4;
- sec. 33, El/2SE1/4;
- sec. 34, NW1/4NE1/4, El/2NW1/4, SW1/4NW1/4, and NW1/4SW1/4.

T. 20 N., R. 38 E.,
- sec. 4, lot 4;
- sec. 5, lot 1, S1/2NE1/4, El/2SW1/4, SW1/4SW1/4, and NW1/4SE1/4;
- sec. 7, El/2NE1/4, SW1/4NE1/4, El/2SW1/4, and W1/2SE1/4;
- sec. 8, NW1/4NW1/4;
- sec. 18, lots 1 and 2, and NE1/4NW1/4.

T. 21 N., R. 38 E., partly unsurveyed,
- sec. 22, S1/2SE1/4;
- sec. 27, N1/2NE1/2, SW1/4NE1/4, SE1/4NW1/4, and SW1/4;
- sec. 28, SE1/4SE1/4;
- sec. 33, El/2NE1/4, SW1/4NE1/4, El/2SW1/4, and W1/2SE1/4;
- sec. 34, NW1/4NW1/4.

EXHIBIT 4

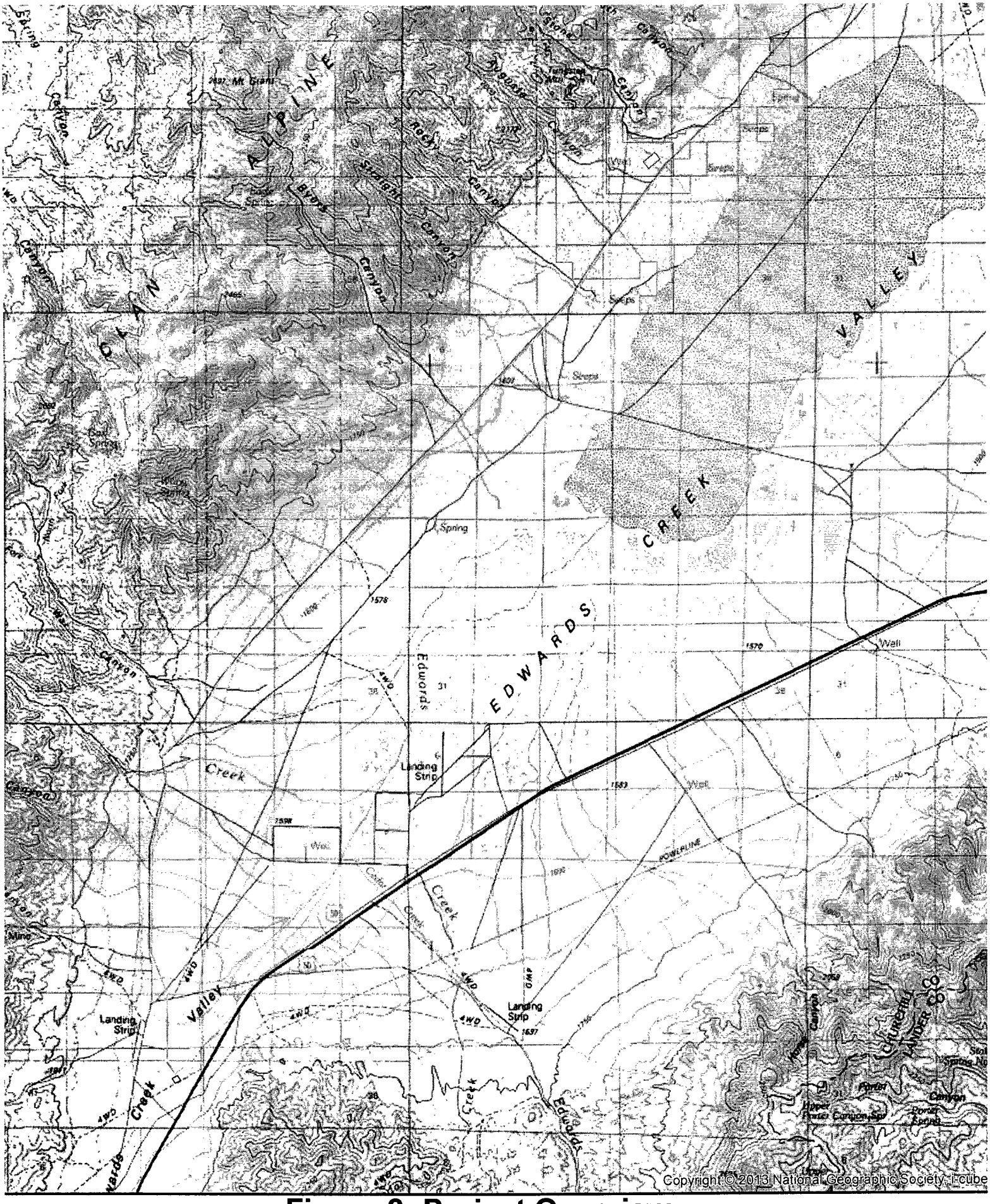

Figure 2: Project Overview
Tungsten Mountain Project

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Miles
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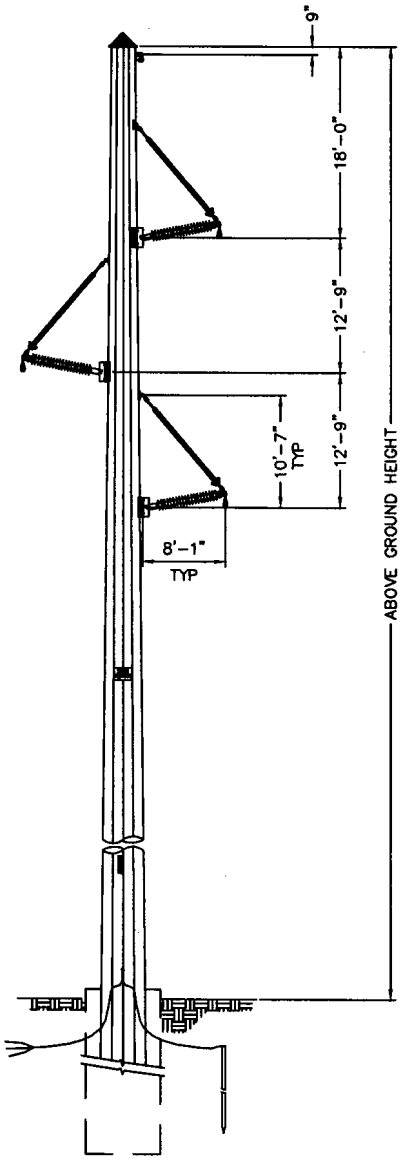
Ormat BLM Leases
Tungsten Plant
Transmission Line
Alpine Switching Station



NOTES:

1. ALL DIMENSIONS ARE TO CENTERLINE OF ATTACHMENT.
2. EMBEDMENT DEPTH - 10% + 4'.
3. INSTALL POLE TOP CONE FOR ANTI-PERCHING AS REQUIRED. KADDAS ENTERPRISES TYPE KE1140 OR SIMILAR

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ORMAT TUNGSTEN MOUNTAIN 230KV LINE
SINGLE POLE STRUCTURE TANGENT 0°-2°
FIGURE 5

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ORIGINAL ISSUE	06/24/16

TRI SAGE CONSULTING
5418 Longley Lane, Suite A
Reno, NV 89511
Ph. (775) 336-1302
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ENGINEER:	JIM BENGOCHEA
PHONE NUMBER:	(775) 336-1302
PROJECT NUMBER:	TM_01
PREPARED BY:	JDC
CHECKED:	JMB
APPROVED:	

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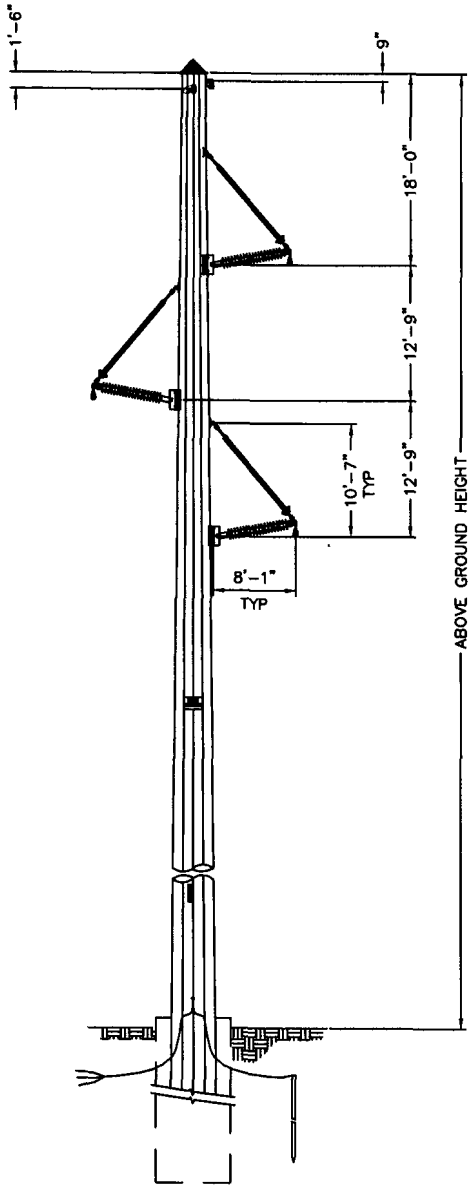
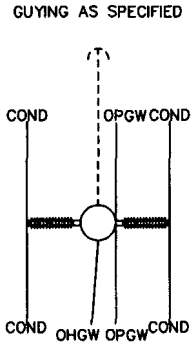


NOTES:

1. ALL DIMENSIONS ARE TO CENTERLINE OF ATTACHMENT.
2. EMBEDMENT DEPTH - 10% + 4'.
3. INSTALL POLE TOP CONE FOR ANTI-PERCHING AS REQUIRED KADDAS ENTERPRISES TYPE KE1140 OR SIMILAR



PLAN VIEW

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ORMAT TUNGSTEN MOUNTAIN 230KV LINE
SINGLE POLE STRUCTURE SWDE TANGENT 0°
FIGURE 6

REVISION NO.	DATE
ORIGINAL ISSUE	06/24/16

TRI SAGE CONSULTING
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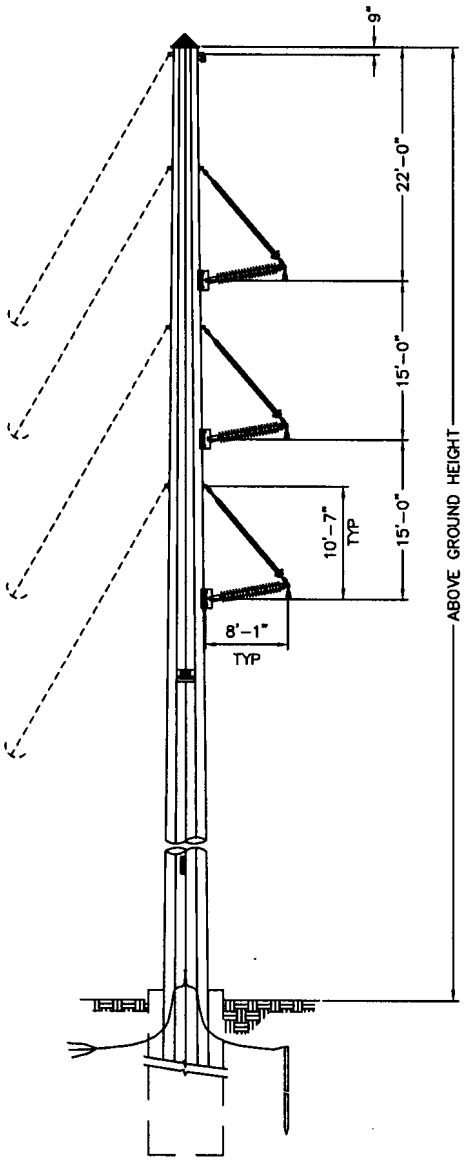
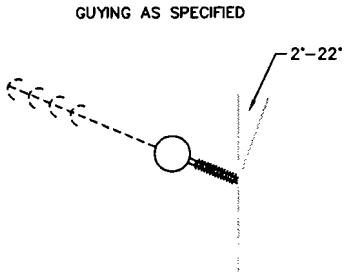
ENGINEER:	JIM BENGOCHEA
PHONE NUMBER:	(775) 336-1302
PROJECT NUMBER:	TM_01
PREPARED BY:	JDC
CHECKED:	JMB
APPROVED:	



NOTES:

1. ALL DIMENSIONS ARE TO CENTERLINE OF ATTACHMENT.
2. EMBEDMENT DEPTH - 10% + 4'.
3. INSTALL POLE TOP CONE FOR ANTI-PERCHING AS REQUIRED. KADDAS ENTERPRISES TYPE KE1140 OR SIMILAR



PLAN VIEW

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ORMAT TUNGSTEN MOUNTAIN 230KV LINE
SINGLE POLE STRUCTURE LIGHT ANGLE 2°-22°
FIGURE 7

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ORIGINAL ISSUE	06/24/16

TRI SAGE CONSULTING
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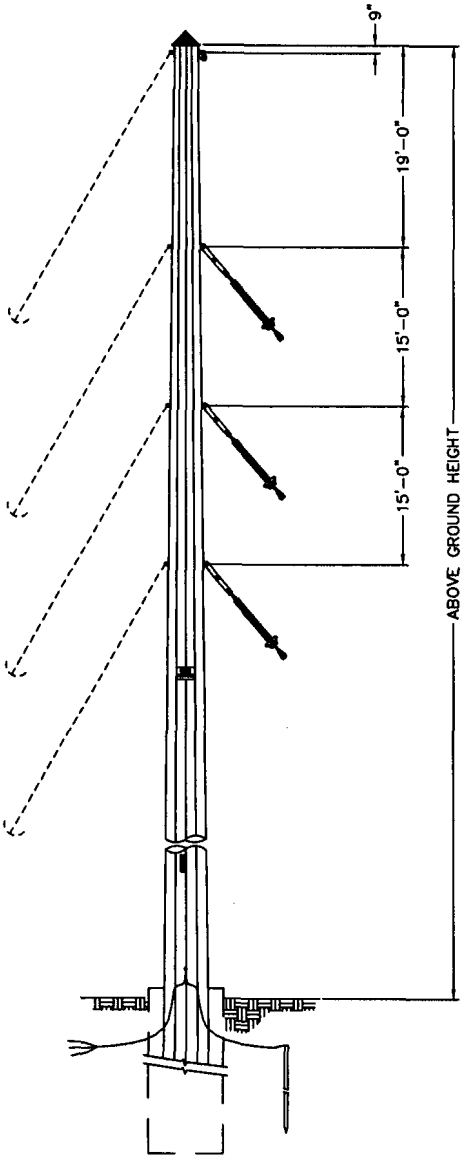
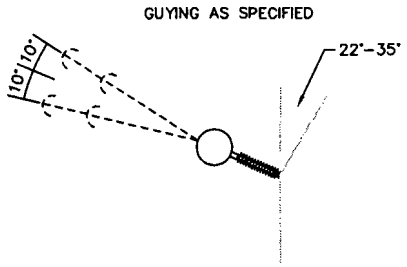
ENGINEER:	JIM BENGOCHEA
PHONE NUMBER:	(775) 336-1302
PROJECT NUMBER:	TM_01
PREPARED BY:	JDC
CHECKED:	JMB
APPROVED:	



NOTES:

1. ALL DIMENSIONS ARE TO CENTERLINE OF ATTACHMENT.
2. EMBEDMENT DEPTH - 10% + 4'.
3. INSTALL POLE TOP CONE FOR ANTI-PERCHING AS REQUIRED. KADDAS ENTERPRISES TYPE KE1140 OR SIMILAR



PLAN VIEW

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ORMAT TUNGSTEN MOUNTAIN 230KV LINE
SINGLE POLE STRUCTURE MEDIUM ANGLE 22°-35°
FIGURE 8

REVISION NO.	DATE
ORIGINAL ISSUE	06/24/16

TRI SAGE CONSULTING
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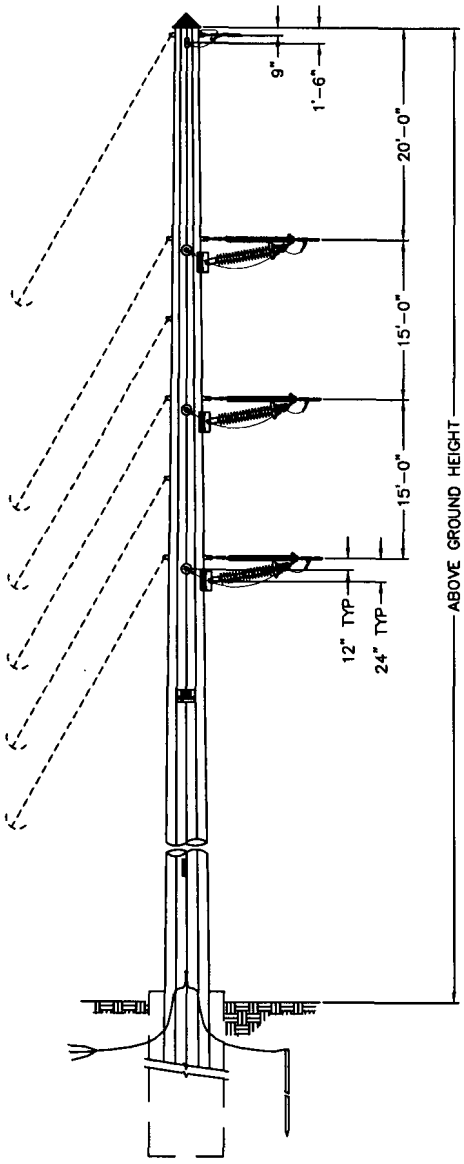
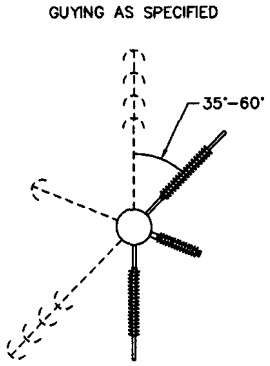
PHONE NUMBER:	(775) 336-1302
PROJECT NUMBER:	TM_01
PREPARED BY:	JDC
CHECKED:	JMB
APPROVED:	



NOTES:

1. ALL DIMENSIONS ARE TO CENTERLINE OF ATTACHMENT.
2. EMBEDMENT DEPTH - 10% + 4'.
3. INSTALL POLE TOP CONE FOR ANTI-PERCHING AS REQUIRED. KADDAS ENTERPRISES TYPE KE1140 OR SIMILAR.



PLAN VIEW

ORMAT®

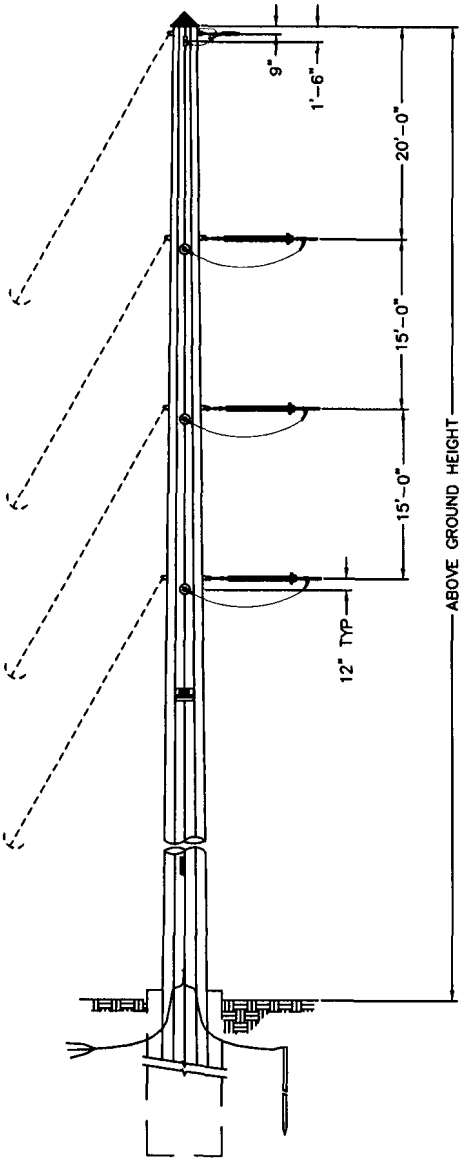
ORMAT TUNGSTEN MOUNTAIN 230KV LINE
SINGLE POLE STRUCTURE HEAVY ANGLE 35°-60°
FIGURE 9

REVISION NO.	DATE
ORIGINAL ISSUE	06/24/16

TRI SAGE CONSULTING
5418 Longley Lane, Suite A
Reno, NV 89511
Ph. (775) 336-1302
Fax: (775) 336-1306

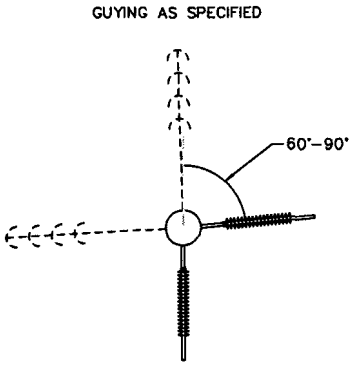
ENGINEER:	JIM BENGOCHEA
PHONE NUMBER:	(775) 336-1302
PROJECT NUMBER:	TM_01
PREPARED BY:	JDC
CHECKED:	JMB
APPROVED:	

Z:\ORMAT DIXIE_TUNGSTEN\STRUCTURE DRAWINGS\TYPICAL STRUCTURES.DWG



NOTES:

1. ALL DIMENSIONS ARE TO CENTERLINE OF ATTACHMENT.
2. EMBEDMENT DEPTH - 10% + 4'
3. INSTALL POLE TOP CONE FOR ANTI-PERCHING AS REQUIRED. KADDAS ENTERPRISES TYPE KE1140 OR SIMILAR



PLAN VIEW

Z:\ORMAT DIXIE_TUNGSTEN\STRUCTURE DRAWINGS\TYPICAL STRUCTURES.DWG

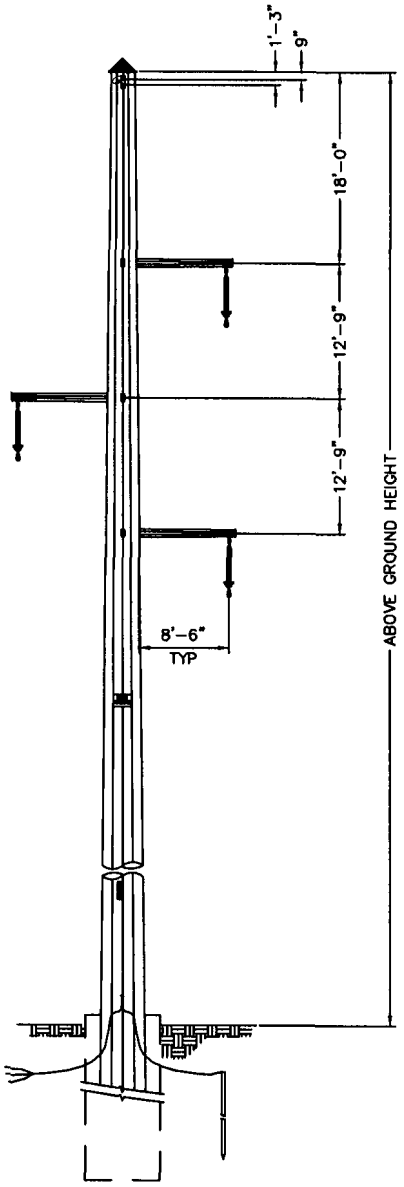
ORMAT®

ORMAT TUNGSTEN MOUNTAIN 230KV LINE
SINGLE POLE STRUCTURE HEAVY ANGLE 60°-90°
FIGURE 10

REVISION NO.	DATE
ORIGINAL ISSUE	06/24/16

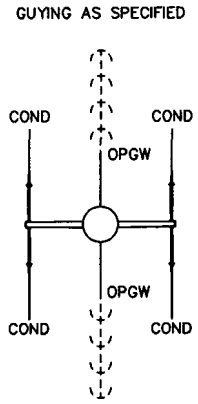
TRI SAGE CONSULTING
5418 Longley Lane, Suite A
Reno, NV 89511
Ph. (775) 336-1302
Fax: (775) 336-1306

ENGINEER:	JIM BENGOCHEA
PHONE NUMBER:	(775) 336-1302
PROJECT NUMBER:	TM_01
PREPARED BY:	JDC
CHECKED:	JMB
APPROVED:	



NOTES:

1. ALL DIMENSIONS ARE TO CENTERLINE OF ATTACHMENT.
2. EMBEDMENT DEPTH - 10% + 4'.
3. INSTALL POLE TOP CONE FOR ANTI-PERCHING AS REQUIRED. KADDAS ENTERPRISES TYPE KE1140 OR SIMILAR



PLAN VIEW

ORMAT®

ORMAT TUNGSTEN MOUNTAIN 230KV LINE
SINGLE POLE STRUCTURE IN LINE DEAD-END 0°
FIGURE 11

REVISION NO.	DATE
ORIGINAL ISSUE	06/24/16

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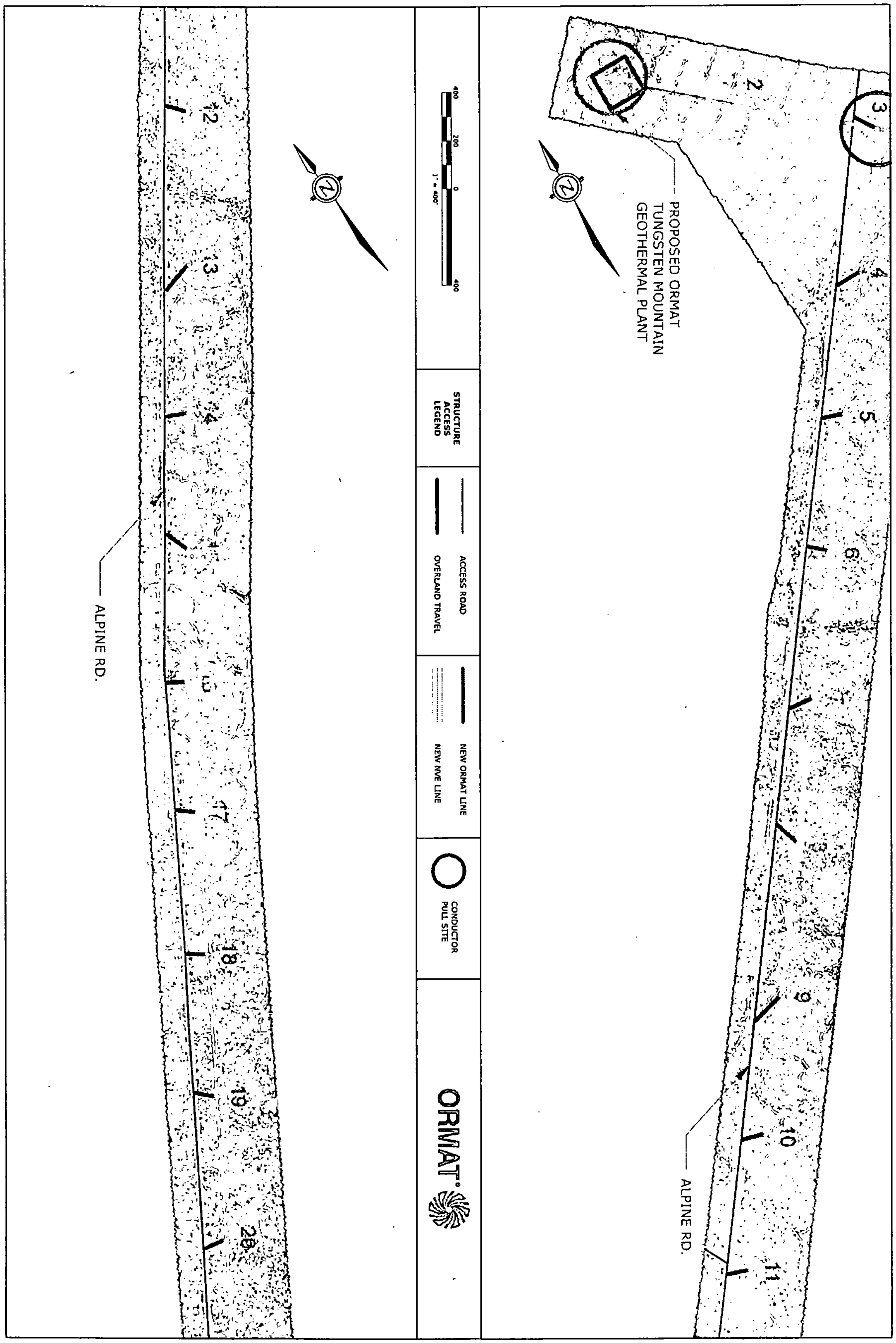
5418 Longley Lane, Suite A
Reno, NV 89511
Ph. (775) 336-1302
Fax: (775) 336-1306

ENGINEER:	JIM BENGOCHEA
PHONE NUMBER:	(775) 336-1302
PROJECT NUMBER:	TM_01
PREPARED BY:	JDC
CHECKED:	JMB
APPROVED:	

Z:\ORMAT DIXIE_TUNGSTEN\STRUCTURE DRAWINGS\TYPICAL STRUCTURES.DWG



ORMAT NEVADA, INC. TUNGSTEN MOUNTAIN PROPOSED 230kV POWERLINE	Rev.	Date	Description	By
PRELIMINARY PROPOSED POLE LOCATIONS AND ACCESS REQUIREMENTS	1	06/24/2016	ORIGINAL ISSUE	JDC
CHURCHILL COUNTY NEVADA				

FIGURE 14

TRI SAGE CONSULTING
5418 Longley Lane
Suite A
Reno, NV 89511
Ph: (775) 336-1302
Fax: (775) 336-1306

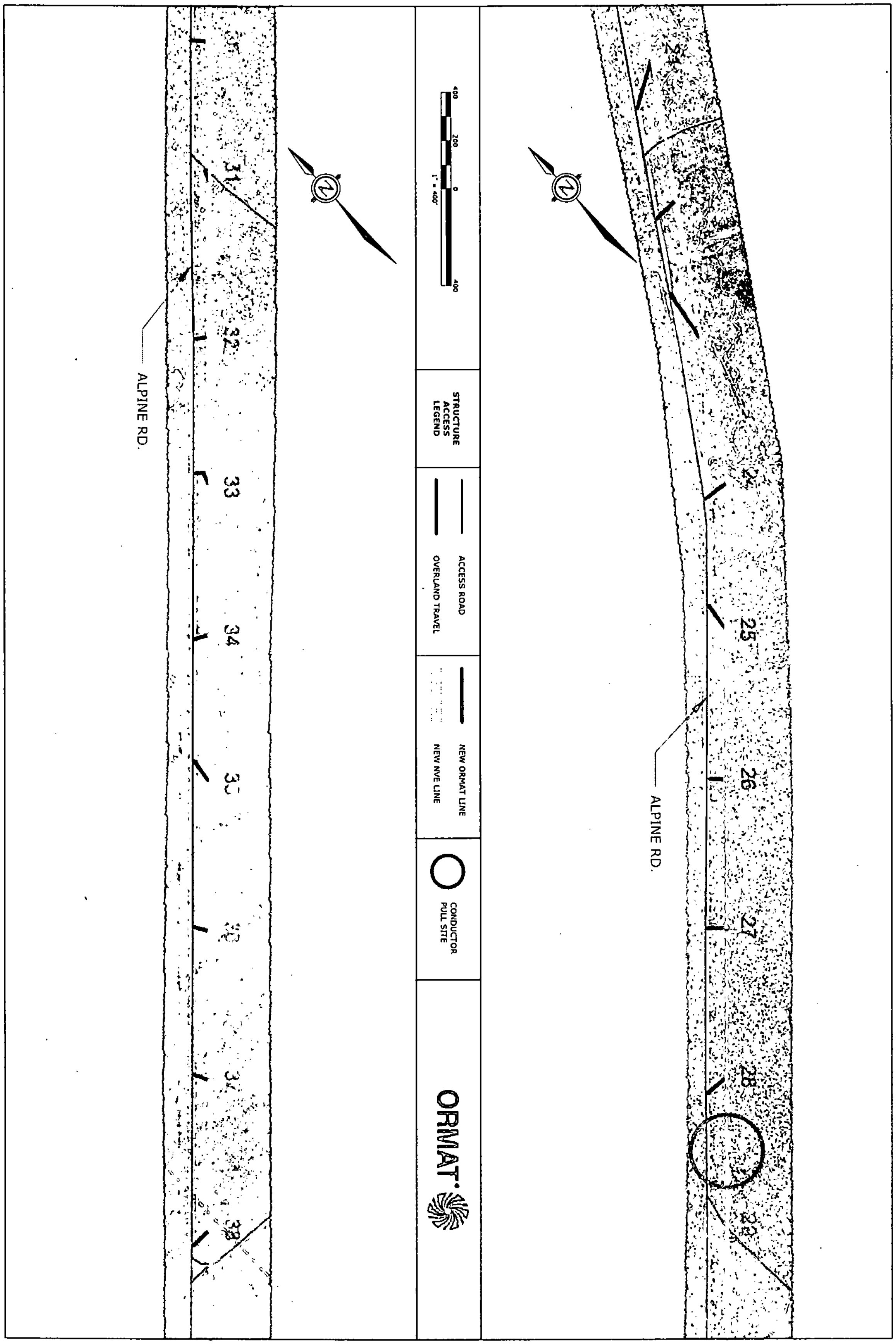


FIGURE 15

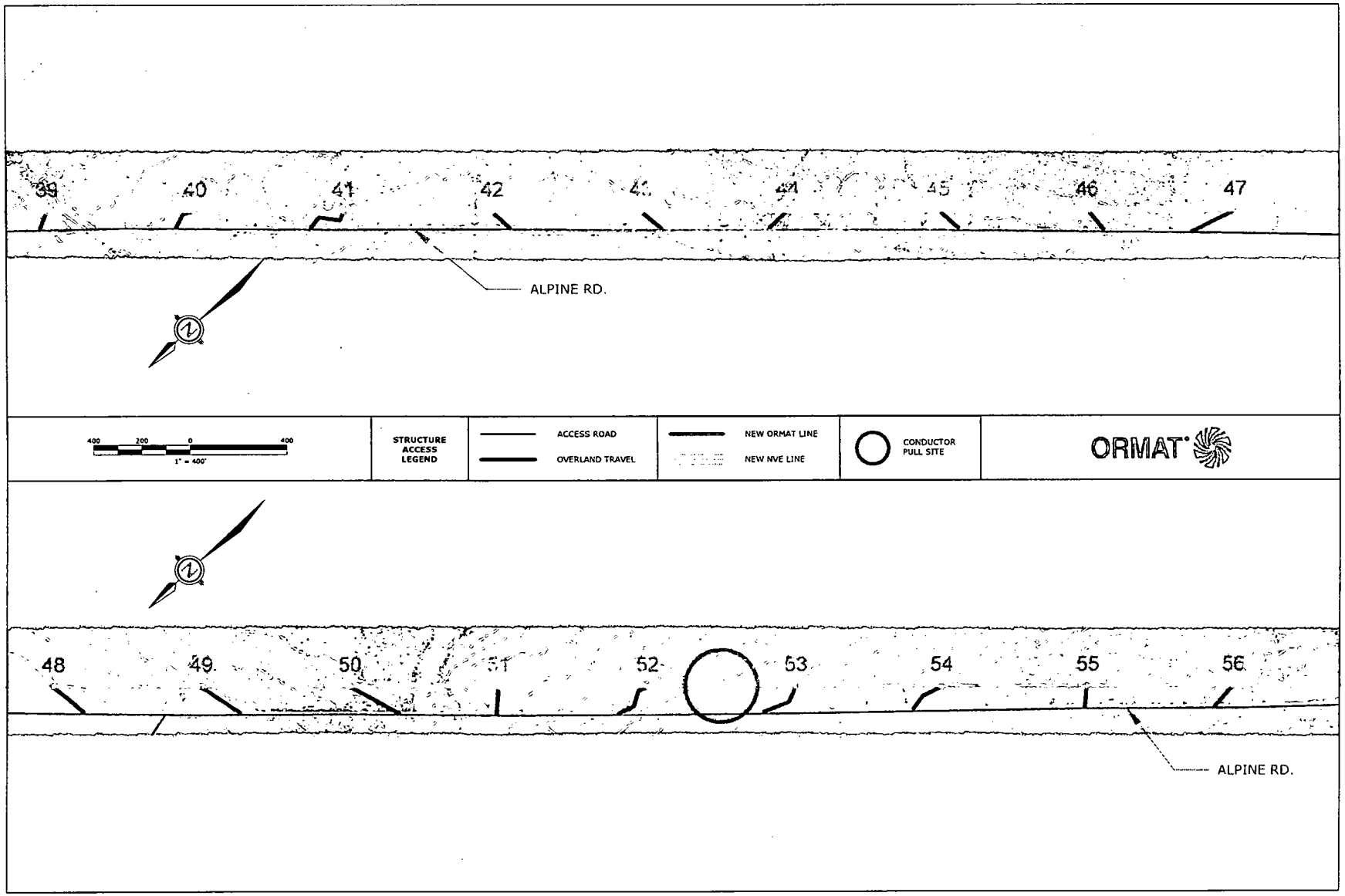
ORMAT NEVADA, INC.
TUNGSTEN MOUNTAIN PROPOSED 230kV POWERLINE

PRELIMINARY PROPOSED POLE LOCATIONS AND ACCESS REQUIREMENTS

CHURCHILL COUNTY — NEVADA

Rev.	Date	Description	By
1	06/24/2016	ORIGINAL ISSUE	JDC

TRI SAGE
CONSULTING
5418 Longley Lane
Suite A
Reno, NV 89511
Ph. (775) 336-1302
Fax: (775) 336-1306



TRI SAGE
Consulting
540 E Langley Lane
Suite A
Reno, NV 89511
Ph. (775) 336-1302
Fax: (775) 336-1306

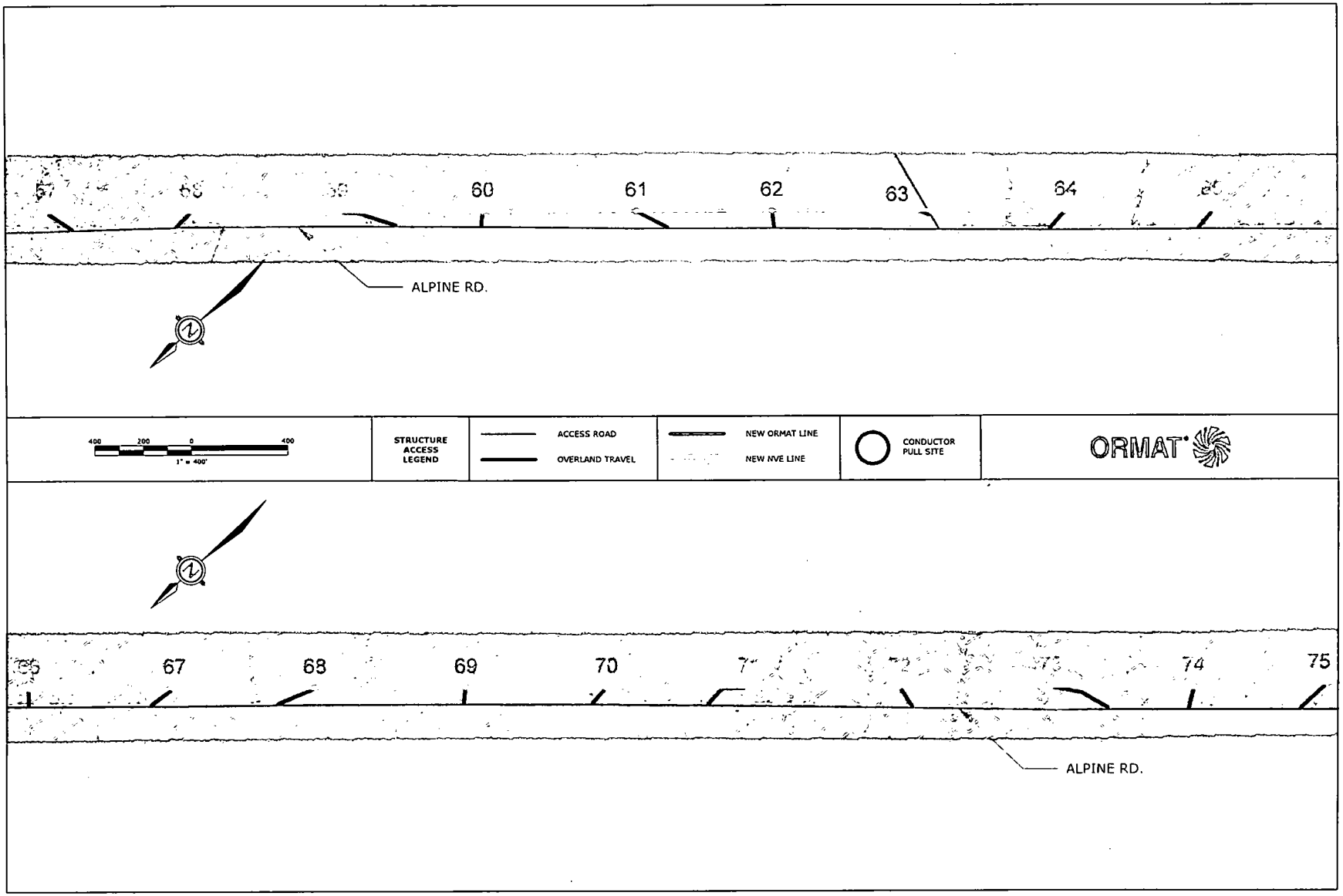
Rev.	Date	Description	By
1	06/24/2016	ORIGINAL ISSUE	JDC

ORMAT NEVADA, INC.
TUNGSTEN MOUNTAIN PROPOSED 230kV POWERLINE

PRELIMINARY PROPOSED POLE LOCATIONS AND ACCESS REQUIREMENTS

CHURCHILL COUNTY NEVADA

FIGURE
16



Rev.	Date	Description	By
1	06/24/2016	ORIGINAL ISSUE	JDC

TRI SAGE
Consulting
5483 Longley Lane
Suite A
Reno, NV 89511
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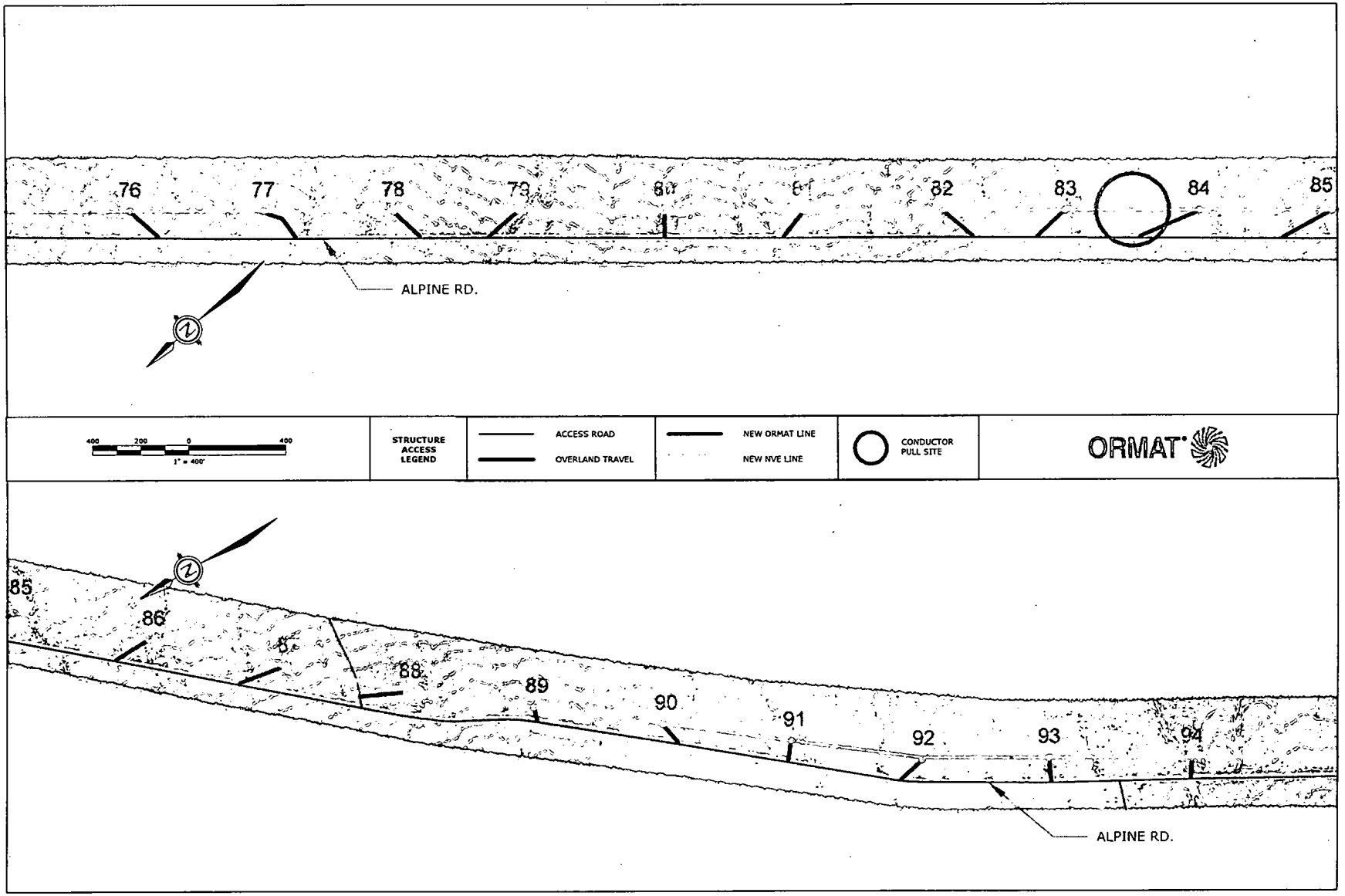
Fax (775) 336-1306

ORMAT NEVADA, INC.
TUNGSTEN MOUNTAIN PROPOSED 230kV POWERLINE
PRELIMINARY PROPOSED POLE LOCATIONS AND ACCESS REQUIREMENTS
CHURCHILL COUNTY NEVADA

FIGURE
17



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5418 Longley Lane
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Reno, NV 89511
Ph. (775) 336-1302
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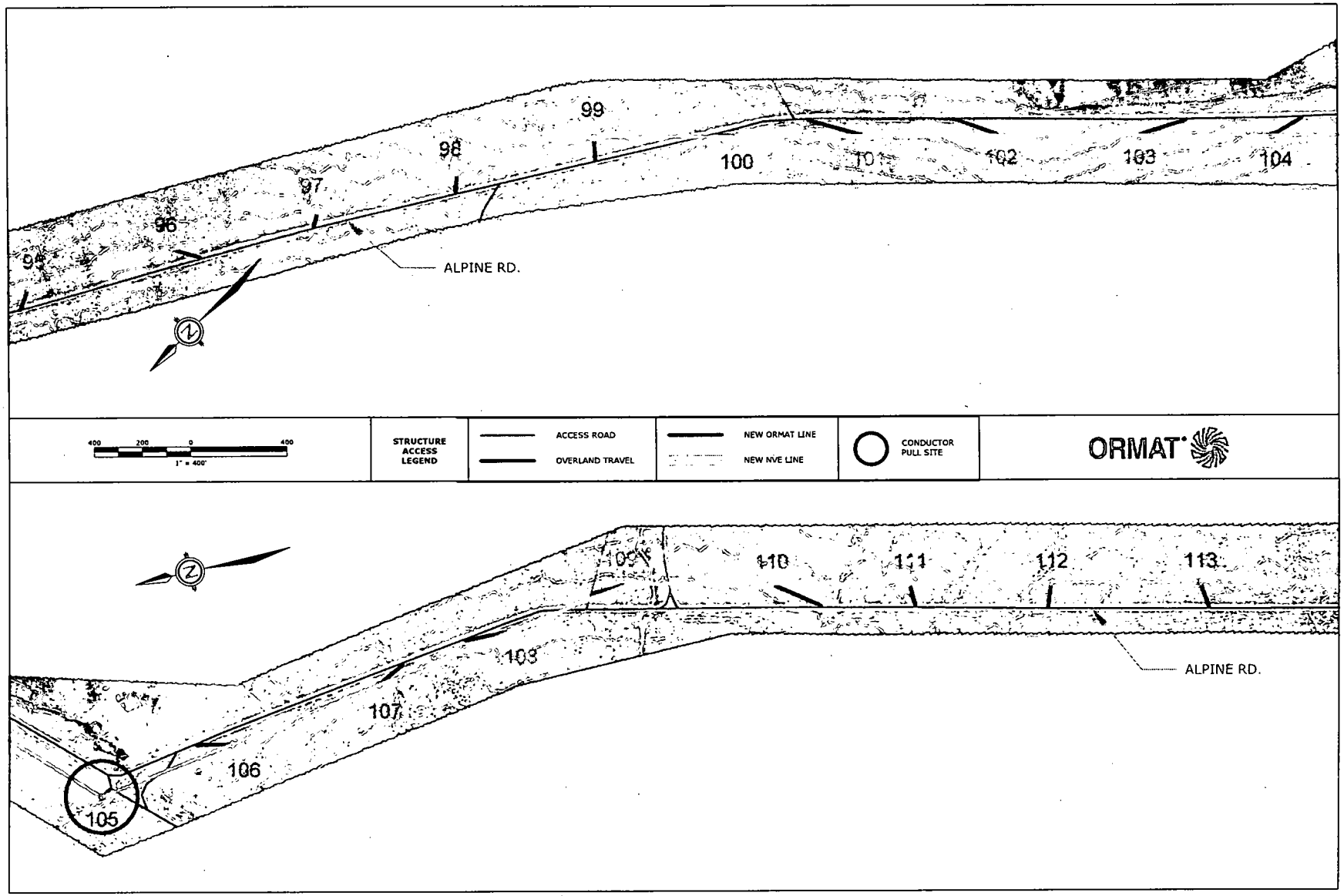
Rev.	Date	Description	By
1	06/24/2016	ORIGINAL ISSUE	JDC

ORMAT NEVADA, INC.
TUNGSTEN MOUNTAIN PROPOSED 230kV POWERLINE

PRELIMINARY PROPOSED POLE LOCATIONS AND ACCESS REQUIREMENTS

CHURCHILL COUNTY NEVADA

FIGURE
18



Rev.	Date	Description	By
1	06/24/2016	ORIGINAL ISSUE	JDC

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5418 Longley Lane
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Reno, NV 89511
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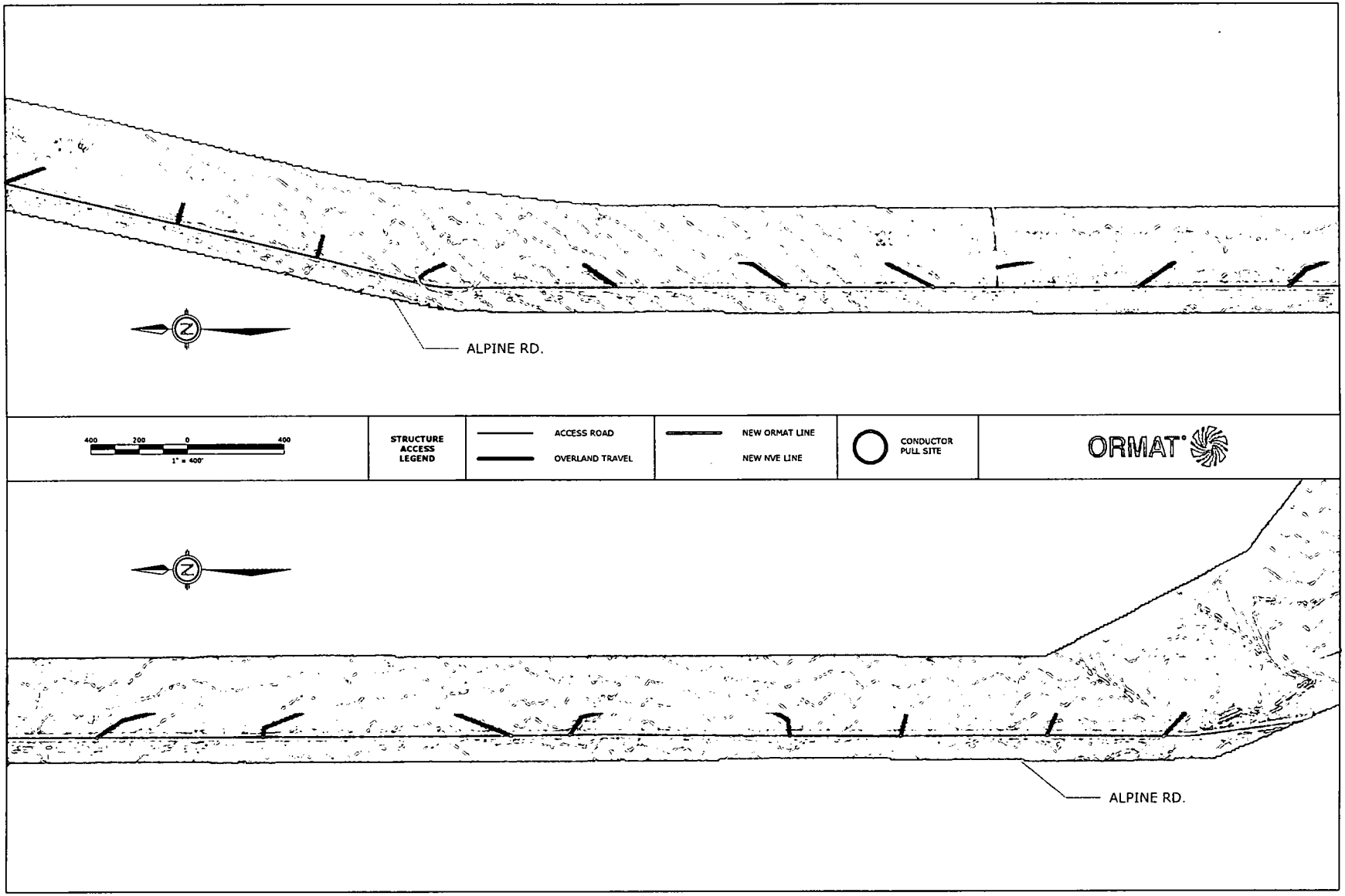
ORMAT NEVADA, INC.
TUNGSTEN MOUNTAIN PROPOSED 230kV POWERLINE

PRELIMINARY PROPOSED POLE LOCATIONS AND ACCESS REQUIREMENTS

CHURCHILL COUNTY NEVADA

FIGURE
19

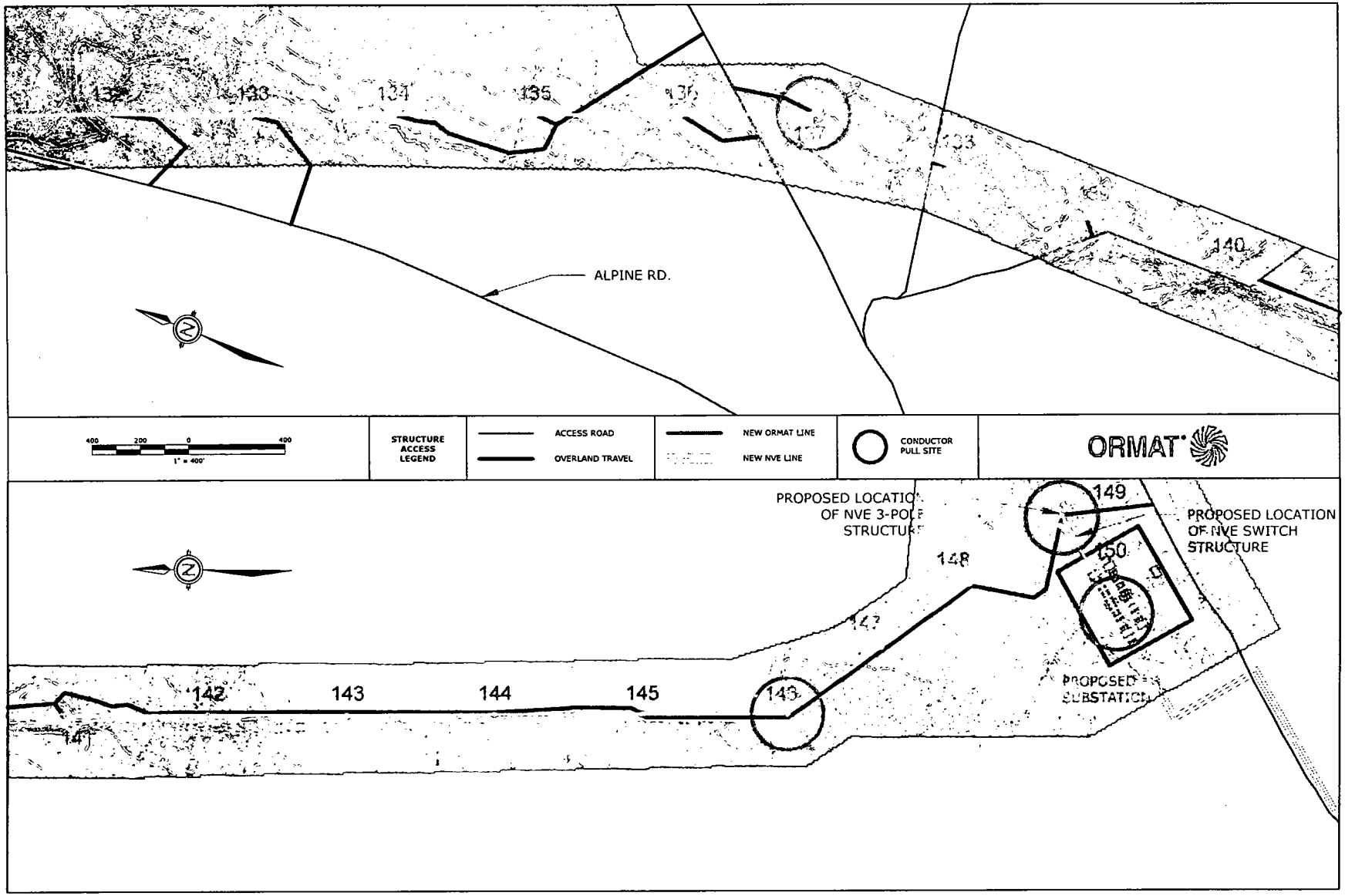


TRI SAGE Consulting
5418 Longley Lane Suite A
Reno, NV 89511
Ph. (775) 336-1302
Fax: (775) 336-1306

Rev.	Date	Description	By
1	06/24/2016	ORIGINAL ISSUE	JDC

ORMAT NEVADA, INC.
TUNGSTEN MOUNTAIN PROPOSED 230kV POWERLINE
PRELIMINARY PROPOSED POLE LOCATIONS AND ACCESS REQUIREMENTS
CHURCHILL COUNTY NEVADA

FIGURE
20



TRI SAGE CONSULTING
5411 Longley Lane
Suite A
Reno, NV 89511
Ph: (775) 336-1302
Fax: (775) 336-1306

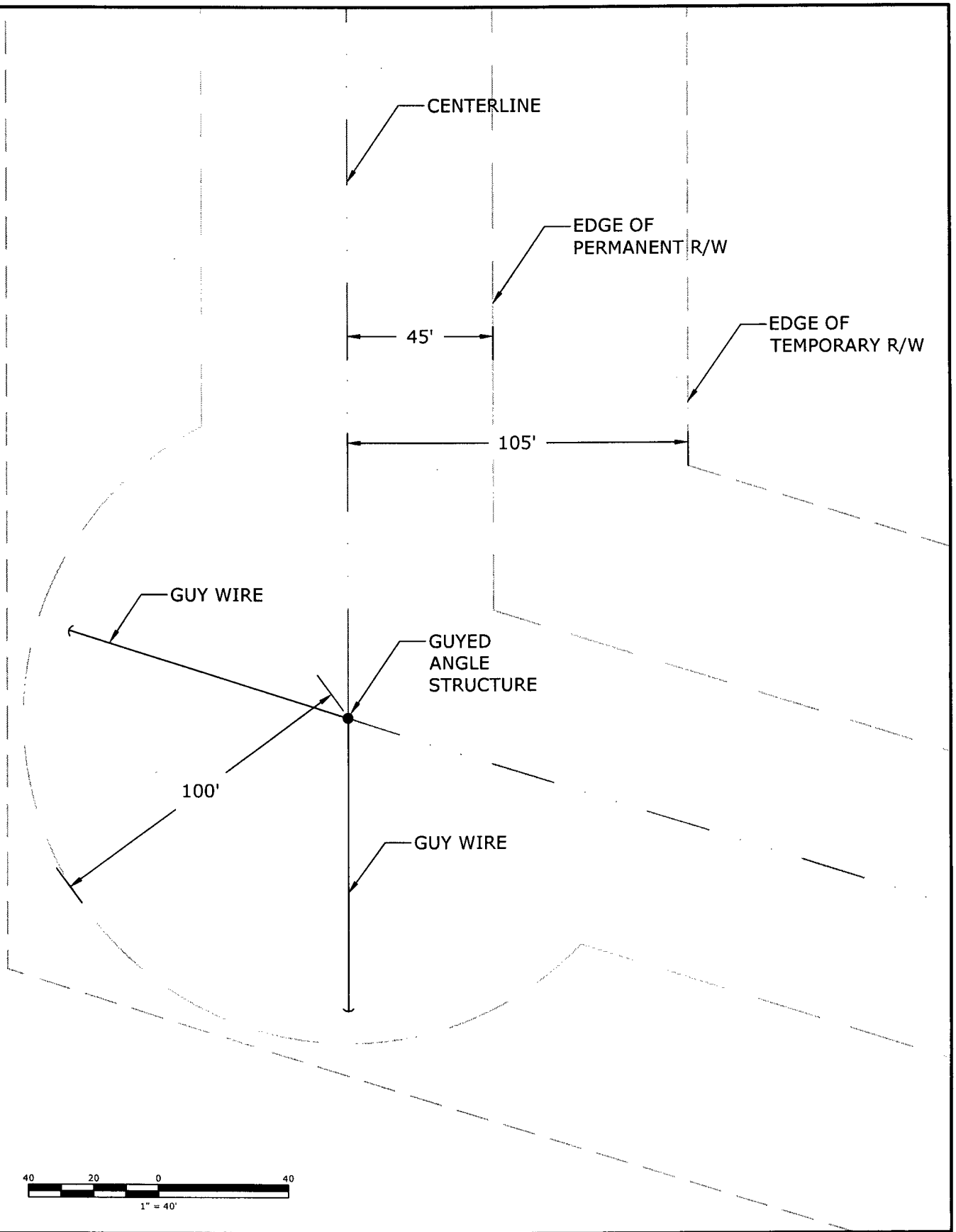
Rev.	Date	Description	By
1	06/24/2016	ORIGINAL ISSUE	JDC

ORMAT NEVADA, INC.
TUNGSTEN MOUNTAIN PROPOSED 230kV POWERLINE

PRELIMINARY PROPOSED POLE LOCATIONS AND ACCESS REQUIREMENTS

CHURCHILL COUNTY NEVADA

FIGURE
21



ORMAT®

ORMAT TUNGSTEN MOUNTAIN 230KV LINE
TYPICAL RIGHT OF WAY AT ANGLE POINT
FIGURE 22

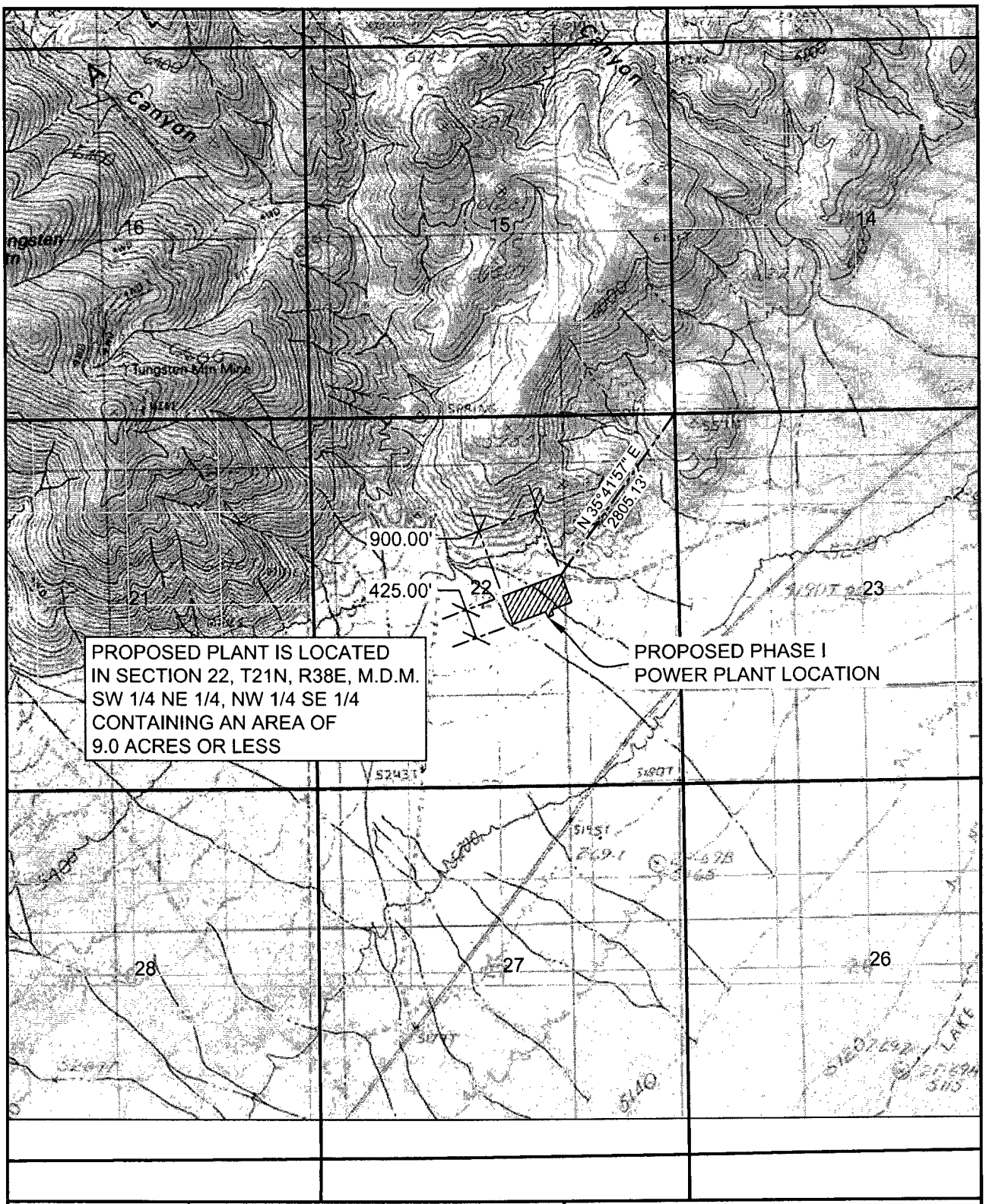
REVISION NO.	DATE
ORIGINAL ISSUE	06/24/16

TRI SAGE CONSULTING
5418 Longley Lane, Suite A
Reno, NV 89511
Ph. (775) 336-1302
Fax: (775) 336-1306

ENGINEER:	JIM BENGOCHEA
PHONE NUMBER:	(775) 336-1302
PROJECT NUMBER:	TM_01
PREPARED BY:	KLC
CHECKED:	JMB
APPROVED:	

Z:\ORMAT DIXIE_TUNGSTEN\POD\ANGLE GUYING DIAGRAM.DWG

EXHIBIT 5



Robison Engineering COMPANY, INC.
846 VICTORIAN AVENUE
SPARKS, NV 89431
www.robisoneng.com

DRAWN: TJP

DATE: 2016-08-30

PREPARED FOR:

ORMAT NEVADA INC.

6225 Neil Road
Reno, NV, 89511
(775)356-9029

0 500' 1000'

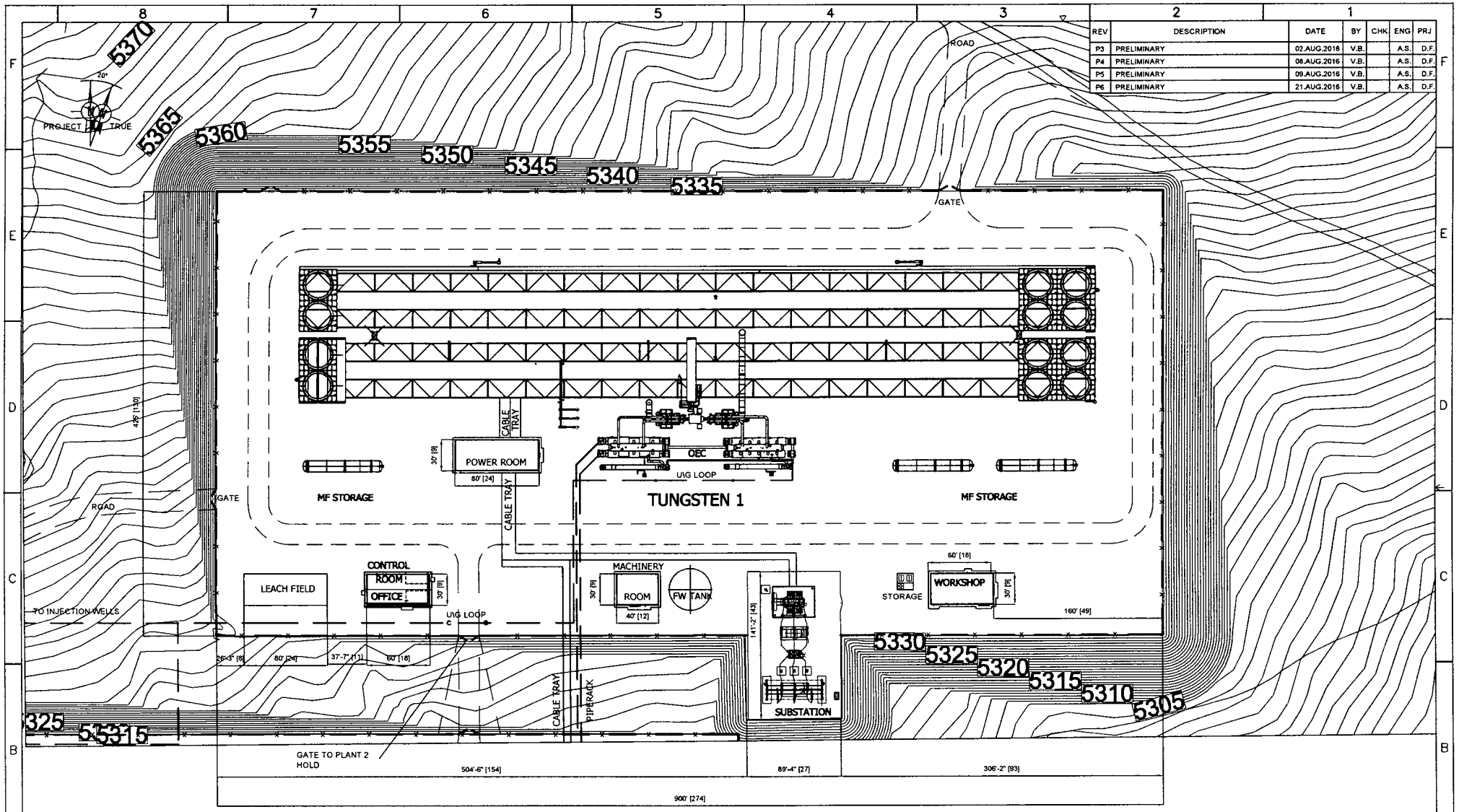
SCALE 1":1000'

TUNGSTEN GEOTHERMAL PLANT

FIGURE 1
PROPOSED POWER PLANT SITE EXHIBIT

CHURCHILL COUNTY NEVADA

PROJECT NO. 1-184-22.003



REV	DESCRIPTION	DATE	BY	CHK	ENG	PRJ
P3	PRELIMINARY	02.AUG.2016	V.B.		A.S.	D.F.
P4	PRELIMINARY	08.AUG.2016	V.B.		A.S.	D.F.
P5	PRELIMINARY	09.AUG.2016	V.B.		A.S.	D.F.
P6	PRELIMINARY	21.AUG.2016	V.B.		A.S.	D.F.

NOTE:

1. THE ARRANGEMENT AND SIZES PRESENTED ARE PRELIMINARY AND INDICATIVE ONLY AND SUBJECT TO CHANGED ON DESIGN OPTIMIZATION , DETAILED DESIGN AND ACTUAL EQUIPMENT PURCHASED (MANUFACTURED).
2. DIMENSION ARE IN FEET [M]

APPROVED: A.B.
CHECKED: A.A.
DESIGNED: V.B. 26.NOV.2016

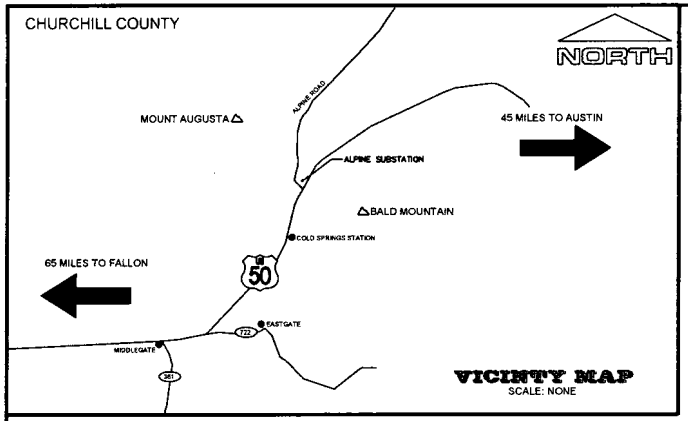
ORMAT

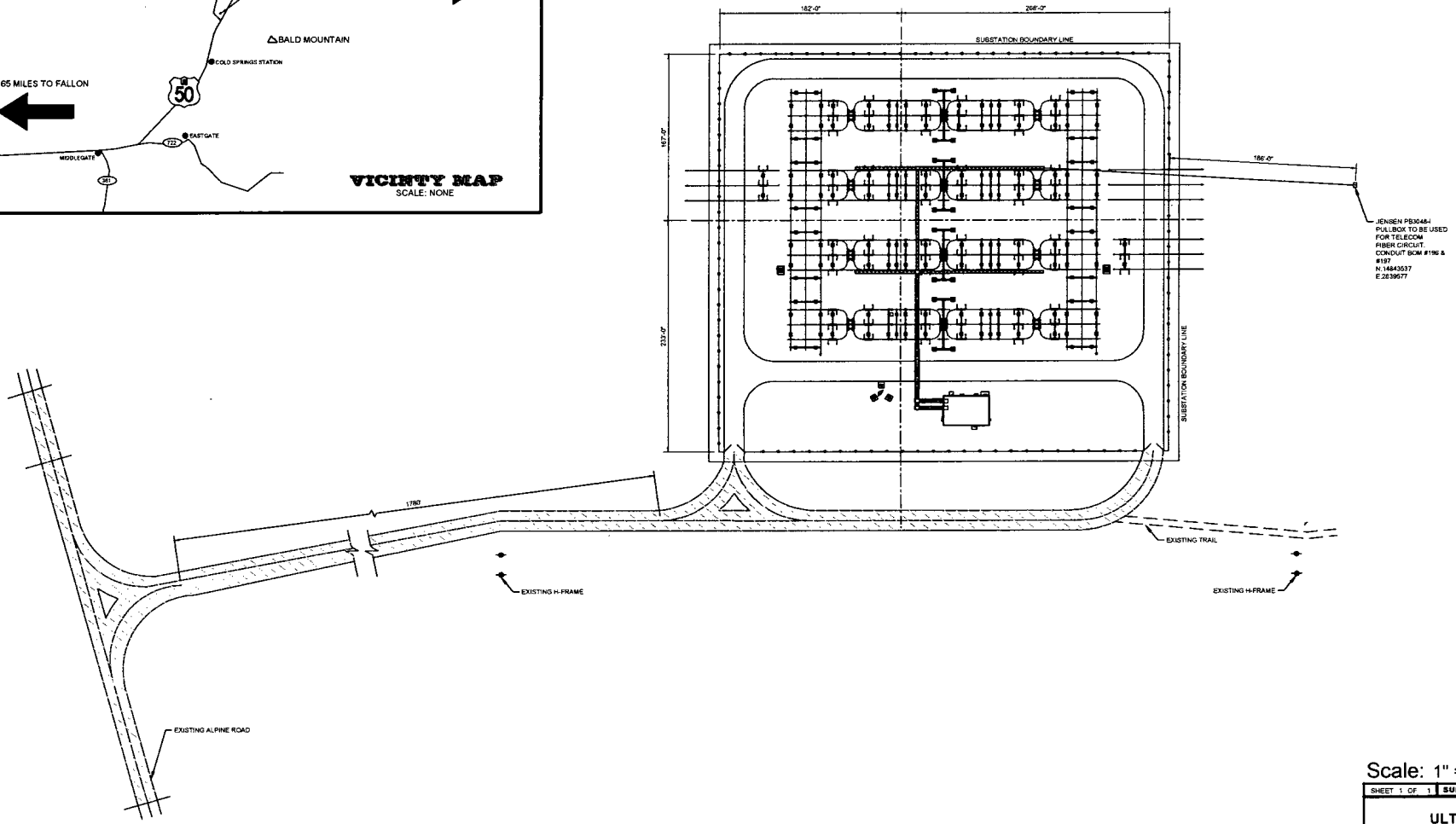
TITLE: TUNGSTEN GEOTHERMAL PROJECT
GENERAL LAYOUT
POWER PLANT

DRAWING NO. 7.863.00.001.0 SHEET 1 OF 2 REV. P6

O:\Ormat-Data\Project data\Berkley\Tungsten\Piping\Drawings\7_863_00_001_0.DWG, 23/08/2016 10:55:52

EXHIBIT 6





ISSUED FOR REVIEW

Scale: 1" = 50'

REV.	REVISION	DATE	DWN	ENG'R	CHK'D	APPR'V	W.O. NUMBER
A	ISSUED FOR REVIEW - 30%	03/16	AJV	ACT	JT		TSE43RCSWC
B	ISSUED FOR REVIEW - 60%	04/16	AJV	ACT	RYB		TSE43RCSWC
C	ISSUED FOR REVIEW - 90%	04/16	TC	ACT	RYB		TSE43RCSWC

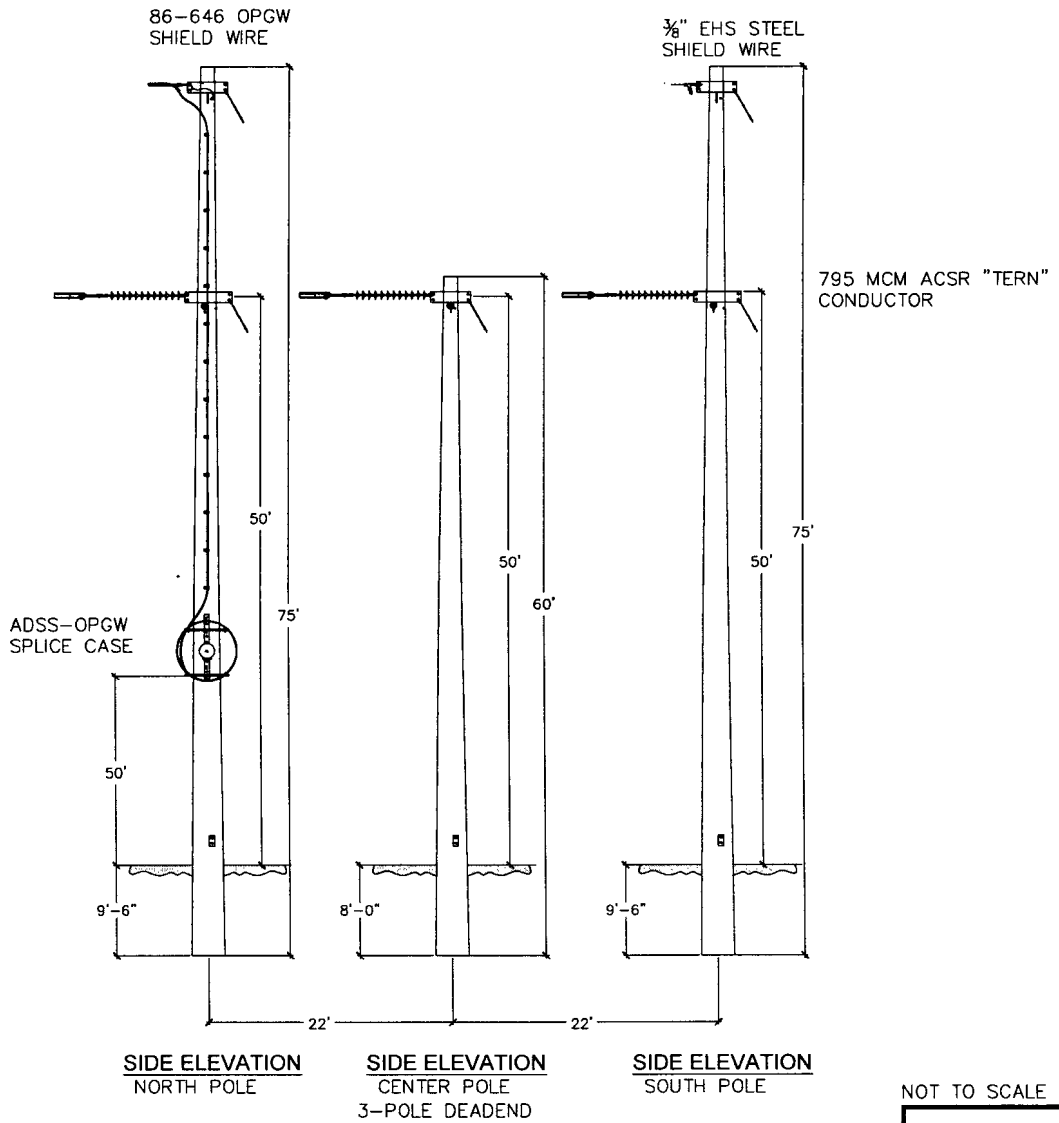
NVEnergy

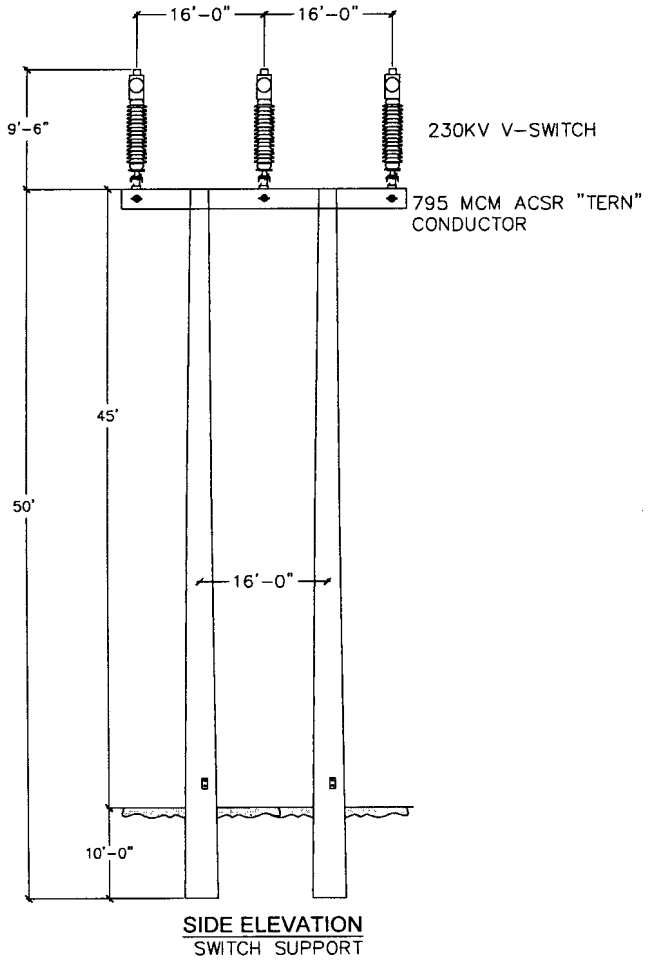
SHEET 1 OF 1 | SUBSTATION ENGINEERING

ULTIMATE
PLAN VIEW

ALPINE SWITCHING STATION

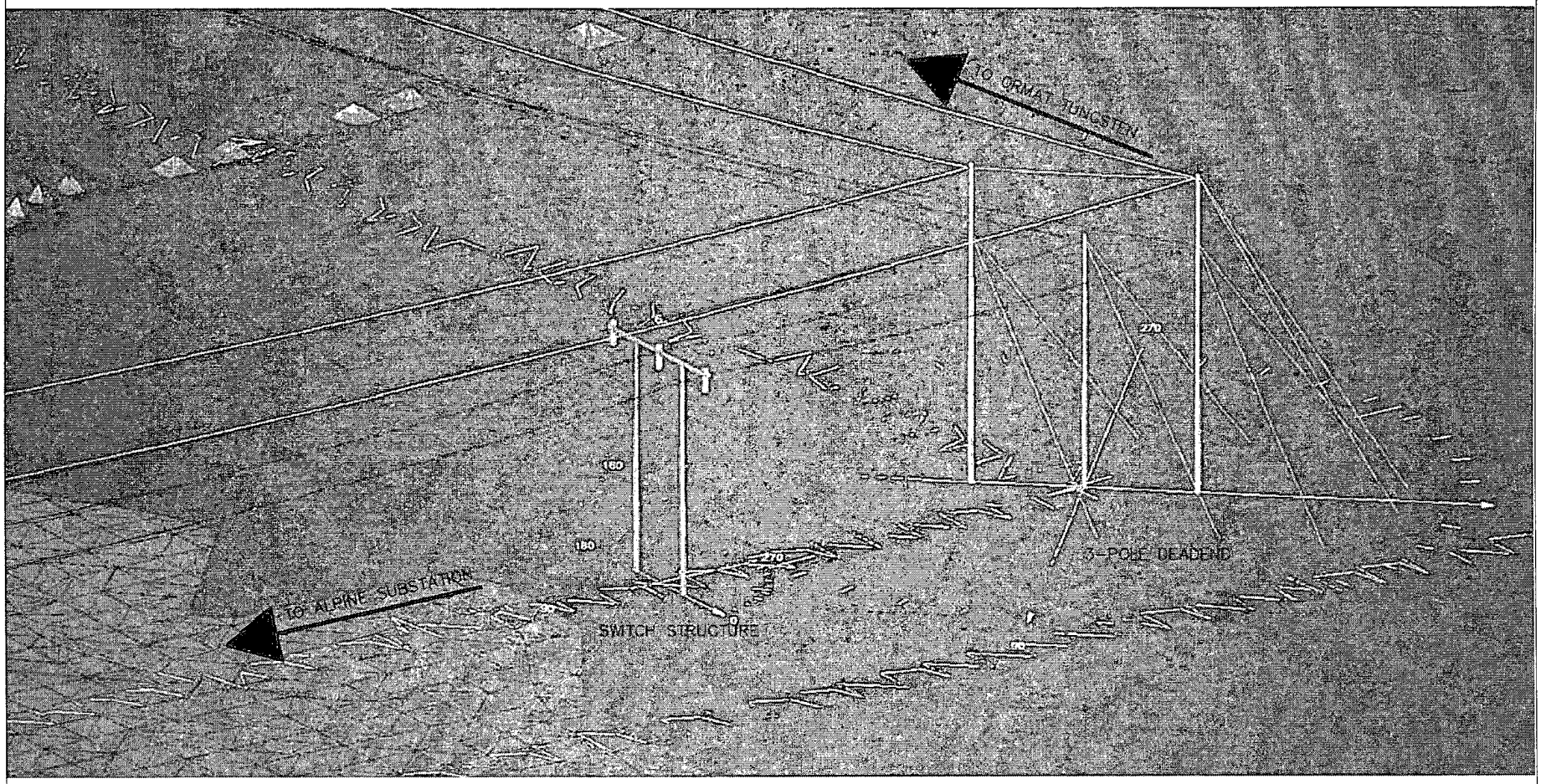
E14-002 | C



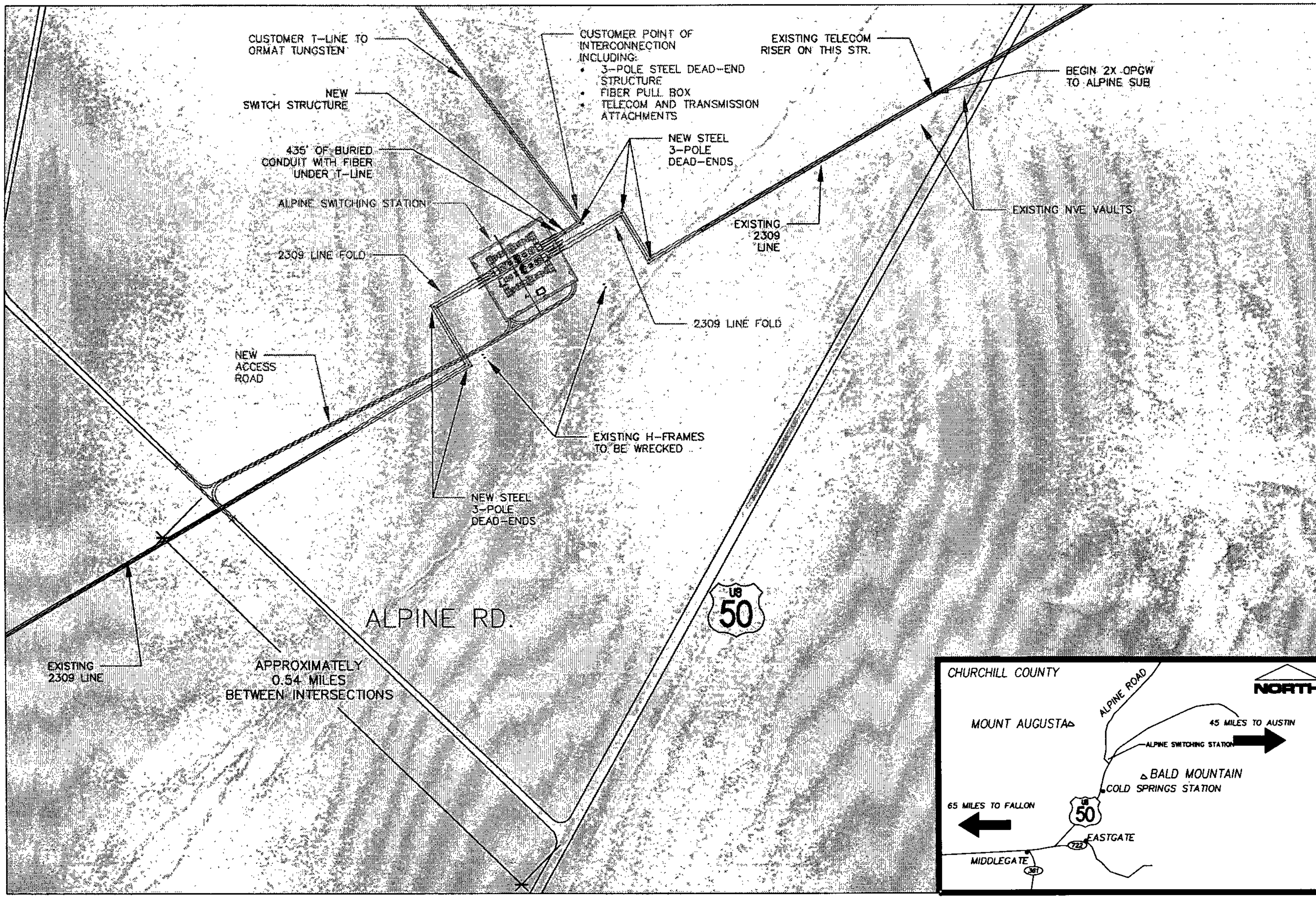


NOT TO SCALE

NVEnergy	ORMAT TUNGSTEN INTERCONNECTION	2309 EXHIBIT
DRAWN: DJK / ENG: DJK / APPR: – / DATE: 06/2016	2309 LINE FOLD 3-POLE DEADEND & SWITCH STRUCTURE EXHIBIT	REVISION: 01 PAGE 1 OF 2



NVEnergy	ORMAT TUNGSTEN INTERCONNECTION	2309 EXHIBIT
DRAWN: DJK / ENG: DJK / APPR: – / DATE: 06/2016	2309 LINE FOLD 3-POLE DEADEND & SWITCH STRUCTURE 3D VIEW EXHIBIT	REVISION: 01 PAGE 2 OF 2



ENGINEER: DEVON KENDALL E.I.

PHONE NUMBER:

PROJECT NUMBER:

SCALE: 1" = 100'

N

NVEnergy

6100 NEIL RD.
RENO, NV 89511
775-834-4011

ALPINE SWITCHING STATION AND 2309 LINE-FOLD EXHIBIT

NEVADA

SHEET 1 OF 1 SHEETS

EXHIBIT 7

BLM

U.S. Department of the Interior
Bureau of Land Management

Environmental Assessment

Tungsten Mountain Geothermal Development Project

March 2016

PREPARING OFFICE

U.S. Department of the Interior
Bureau of Land Management
Carson City District, Stillwater Field Office
5665 Morgan Mill Road
Carson City, Nevada 89701 USA
(775) 885-6000
(775) 885-6147
ccfoweb@blm.gov

Environmental Assessment
Tungsten Mountain Geothermal Development Project

Prepared by
U.S. Department of the Interior
Bureau of Land Management
Carson City District, Stillwater Field Office

March 2016
DOI-BLM-NV-C010-2016-0016-EA

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Table of Contents

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Acronyms

ARPA	Archeological Resources Protection Act
ATV	All-terrain Vehicle
AUM	Animal Unit Month
APE	Area of Potential Effect
APM	Adopted Protection Measures
BLM	Bureau of Land Management
BMPs	best management practices
CEQ	Council on Environmental Quality
CESA	Cumulative Effects Study Area
CFR	Code of Federal Regulations
CRMP	Carson City District Consolidated Resource Management Plan, Approved May, 11, 2001
DOI	U.S. Department of the Interior
DR	Decision Record (for an Environmental Assessment
EA	Environmental Assessment
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ESD	Ecological Site Description
FONSI	Finding of No Significant Impact
FPST	Fallon Paiute Shoshone Tribe
GHG	Greenhouse Gas
GRSG	Greater sage-grouse
HMA	Herd Management Area
IDT	Interdisciplinary Team
IM	Instruction Memorandum
KOP	Key Observation Point
kV	kilovolt
MAAT	mean annual air temperature
MAP	mean annual precipitation
MBTA	Migratory Bird Treaty Act
MW	megawatt
NAAQS	National Ambient Air Quality Standards
NDEP	Nevada Division of Environmental Protection
NDOM	Nevada Division of Minerals
NDOW	Nevada Department of Wildlife
NDWR	Nevada Division of Water Resources
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NRS	Nevada Revised Statutes
OHMA	Other Habitat Management Area
PM10	particulate matter less than 10 microns
RDF	Required Design Features
RFFA	Reasonably Foreseeable Future Actionst
ROD	Record of Decision
ROW	Right-of-Way
SAD	Surface Area Disturbance
SFO	Stillwater Field Office of the BLM Carson City District
SWReGAP	Southwest Regional Gap Analysis Project
USC	United States Code
USDA	U.S. Department of Agriculture

USFWS	U.S. Fish and Wildlife Service
VRI	Visual Resources Inventory
VRM	Visual Resources Management
WSA	Wilderness Study Area

Chapter 1. Introduction

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1.1. Identifying Information

Tungsten Mountain Geothermal Development Project, DOI-BLM-NV-C010-2016-0016-EA .

1.1.1. Location of Proposed Action

Ormat is proposing to construct, operate and maintain the Tungsten Mountain Geothermal Development Project (Project or Proposed Action) in Churchill County, Nevada (see Figure 1).

The geothermal portions of the Project are located within the Tungsten Mountain Geothermal Unit (NVN-88836X), which is comprised of federal geothermal leases N-85715, N- 86897, N-86898, N-88428, N-90744 and N-92480. The Tungsten Mountain Unit area encompasses approximately 5,840 acres of public lands in all or portions of Sections 13, 21-28 and 33-34, Township 21 North, Range 38 East (T. 21 N., R. 38 E.), Mount Diablo Baseline and Meridian (see Figure 2).

The Project also includes construction of up to approximately 17 miles of gen tie line (depending on the route selected) which would originate at the proposed substation within the Unit area, trend south parallel to the County Road and terminate at the proposed Alpine switching station in Section 33, T. 19 E., R. 37 E. (see Figure 2).

1.1.2. Name and Location of Preparing Office

Bureau of Land Management, Carson City District, Stillwater Field Office

1.1.3. Lead Office - and Number

Stillwater Field Office LLNVC01000

1.1.4. Subject Function Code, Lease, Serial or Case File Number

Federal Geothermal Unit #NVN-88836X

1.1.5. Applicant

ORNI 43 LLC (Ormat)

1.2. Background

In 2008, ORNI 43 LLC (Ormat), began obtaining federal geothermal leases in the Tungsten Mountain area of Churchill County, Nevada. In 2011, the federal geothermal leases were unitized. Following acquisition of the federal geothermal leases and formation of the Unit, Ormat began conducting exploration activities.

Exploration activities in the Unit were previously evaluated in the Tungsten Mountain Geothermal Exploration Project EA (BLM 2012a). A Finding of No Significant Impact (FONSI) and Decision Record (DR) were signed on March 28, 2012. Geothermal exploration activities authorized by the BLM are current and ongoing. Through these exploration activities, Ormat has acquired new

information about the geothermal resource and is seeking authorization for the development of power plants, associated facilities, and a gen-tie.

Ormat has submitted to the BLM (Stillwater Field Office of the Carson City District) a Utilization Plan for the development of a geothermal power plant, well field, and associated facilities; and a Plan of Development for the construction of a gen-tie to connect produced power to the electric grid.

1.3. Purpose and Need for Action

The purpose of the Proposed Action is to allow Ormat to develop the geothermal resources within the Tungsten Mountain Geothermal Unit on public lands managed by the BLM which are leased to Ormat. The need for the action is established by the BLM's responsibility under the Geothermal Steam Act, its revisions of 2007, and its implementing regulations under 43 Code of Federal Regulations (CFR 3270; the Minerals Leasing Act of 1920, as amended; and Secretarial Order 3285 A1 of February 22, 2010, (which establishes the development of environmentally responsible renewable energy as a priority for the U.S. Department of the Interior (DOI)) to respond to the combined Operations/Utilization Plan submitted by Ormat for the exploration, construction, and operation of the Proposed Action.

1.4. Land Use Plan Conformance Statement

The Proposed Action described below is in conformance with the Carson City District Consolidated Resource Management Plan (CRMP), page # MIN-1, RMP Level Decisions, Desired Outcomes 1: encourage development of energy and mineral resources in a timely manner to meet national, regional and local needs consistent with the objectives for other public land uses), and # MIN-5, Standard Operating Procedures: Leasable Minerals, 5: oil, gas and geothermal exploration and production upon BLM land are conducted through leases with the Bureau and are subject to terms and stipulations to comply with all applicable federal and state laws pertaining to various considerations for sanitation, water quality, wildlife, safety, and reclamation. Stipulations may be site specific and are derived from the environmental analysis process.

The CRMP has been amended by the Nevada and Northeastern California Greater Sage-Grouse Approved Resource Management Plan Amendment (USDI, BLM 2015b). The Record of Decision (ROD) (USDI, BLM 2015a) and Approved Resource Management Plan Amendments for the Great Basin Region, including the Greater Sage-Grouse Sub-Region of Nevada and Northeastern California, were signed on September 21, 2015 by the Director of the BLM and the Assistant Secretary of Land and Minerals Management (henceforth referred to as the Decision). This Decision in conjunction with the approved resource management plans and approved resource management plan amendments constitutes BLM land use planning decisions to conserve the Greater Sage-Grouse (GRSG) and its habitats throughout its remaining range that is located on public lands administered by the BLM. The efforts of the BLM, in coordination with the Forest Service on National Forest System lands within the remaining range of the species, constitute a coordinated strategy for conserving the GRSG and the sagebrush-steppe ecosystem on most Federal lands on which the species depends. Appendix C of this Decision states that Required Design Features (RDFs) are required for certain activities in all GRSG habitat. RDFs establish the minimum specifications for certain activities to help mitigate adverse impacts. The RDFs are included as Appendix C of this EA. The Project Area has been mapped as OHMA (Other Habitat

Management Areas), and the Project components are in conformance with the amended RMP, and are compliant with the applicable RDFs (see Appendix C).

1.5. Relationships to Statutes, Regulations, Plans and Environmental Analysis

The Proposed Action is consistent with the following documents:

- Federal Land Policy and Management Act of 1976;
- Endangered Species Act of 1973;
- National Environmental Policy Act of 1969;
- 40 CFR 1500 (et seq.), Regulations for Implementing the Procedural Provisions of NEPA;
- Considering Cumulative Effects under NEPA (CEQ 1997);
- 43 CFR Part 46, Implementation of NEPA of 1969; Final Rule, effective November 14, 2008;
- DOI requirements (Department Manual 516, Environmental Quality) (DOI 2008);
- BLM NEPA Handbook (H-1790 1), as updated (BLM 2008a);
- The Geothermal Steam Act of 1970 (30 USC 1001-1025);
- 43 CFR 3200, Geothermal Resources Leasing and Operations; Final Rule, May 2, 2007;
- The Energy Policy Act of 2005; The National Energy Policy, Executive Order 13212 and best management practices (BMPs) as defined in *Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development, Fourth Edition* (Gold Book) (BLM 2007a);
- The Geothermal Energy Research, Development, Demonstration Act of 1974;
- Migratory Bird Treaty Act of 1918;
- National Historic Preservation Act (54 U.S.C. §300101 et seq.);
- Section 106 of the NHPA (54 U.S.C. §306108);
- Archeological Resources Protection Act;
- Native American Graves Protection and Repatriation Act;
- Indian Sacred Sites – EO 13007;
- Consultation and Coordination with Indian Tribal Governments – EO 13175; and
- Tungsten Mountain Geothermal Exploration Project Environmental Assessment (BLM 2012a).

In 2008, the BLM completed the Programmatic Environmental Impact Statement for Geothermal Resources Leasing in the Western United States (BLM 2008b). This Programmatic Environmental Impact Statement was the foundation for a Record of Decision (ROD) and Resource Management Plan Amendments for Geothermal Resources Leasing in the Western United States (BLM

2008c). This ROD amended BLM Resource Management Plans, including the CRMP (BLM 2001), to identify public lands that are administratively and legally closed or open to leasing; and to develop a comprehensive list of stipulations, BMPs, and procedures to serve as consistent guidance for future geothermal leasing and development. Special stipulations developed in the ROD were applied to geothermal resource leases subsequently issued by BLM, including the federal geothermal leases issued to Ormat for Tungsten Mountain.

1.6. Decision to Be Made

Applications for geothermal utilization submitted to BLM may be approved only after an environmental analysis is completed. BLM decision options include approving the Proposed Action as defined in the Utilization Plan and right-of-way application as submitted by Ormat; approving the Proposed Action with stipulations to mitigate environmental impacts; or denying the Proposed Action. In addition, the BLM would establish an interim VRM class for the locations where project facilities would be developed.

1.7. Scoping, Public Involvement and Issues

The BLM Stillwater Field Office held interdisciplinary team (IDT) meetings in July 2014 and June 2015. Several resources were identified as being present and potentially impacted by the Proposed Action (see Table3, Table 4 and Section 3.4). External scoping was performed with the Fallon Paiute-Shoshone Tribe regarding the possibility of Native American religious concerns or any other impacts that could result from the Proposed Action. This scoping process is detailed in Section 3.4.3 (Native American Religious Concerns).

Comments were accepted on the *Tungsten Mountain Geothermal Development Project* Environmental Assessment (EA), DOI-BLM-NV-C010-2016-0016-EA, for a 30 day period from December 22, 2015 through January 21, 2016; although comments received in a timely manner after this date were also considered. Comment letters were received from eight (8) Federal and State government agencies by email. The Federal Government Agencies were the US Environmental Protection Agency (USEPA) and the Navy (Naval Air Station Fallon). State agencies that commented were the Nevada State Land Use Planning Agency, the Nevada State Historic Preservation Office (SHPO), the Nevada Division of Water Resources, the Nevada Department of Wildlife, the Nevada Division of Environmental Protection (NDEP) - Bureau of Safe Drinking Water and the NDEP - Bureau of Air Pollution Control. Comments received and changes that were made to the EA as a result of the comment submissions are noted in the response table found in Appendix E of the EA.

Chapter 2. Proposed Action and Alternatives

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2.1. Proposed Action

ORNI 43 LLC (Ormat) is proposing the Tungsten Mountain Geothermal Development Project (Project) in Churchill County, Nevada (see Figure 1). The Project includes the construction and operation of two geothermal power plants, geothermal production and injection well pads and wells, geothermal fluid pipelines, access roads, a generation tie (gen-tie) line and ancillary facilities.

The proposed Project Area is comprised of the Tungsten Mountain Unit area and the width of the proposed ROW for the gen-tie line (200-feet wide, expanded an additional 100 feet at the angle points), (see Figure 2). The Project is further described in the sections below.

2.1.1. Geothermal Wells

Within the Unit area, Ormat expects that together the two power plants would require up to 24 production and injection wells (see Figure 3 and Table 1).

The number of geothermal production and injection wells required for the Project is principally dependent on the productivity (or injectivity) of the wells and the temperature and pressure of the produced geothermal fluid. Production wells flow geothermal fluid to the surface to the power plant(s); injection wells are used to inject geothermal fluid from the power plant(s) back into the geothermal reservoir. Injection ensures the longevity and renewability of the geothermal resource.

Table 1: Proposed Tungsten Mountain Production and Injection Wells

Well Name (Kettleman No.)	Approximate UTM Coordinates (NAD83)	
	Easting (m)	Northing (m)
56-22	440598.3	4391279.9
17-23	441483.2	4391115.4
36-22	440921.5	4391260.2
24-22	440176.5	4391786.6
76-22	441161.0	4391404.4
13-22	439952.1	4391827.5
54-22	440653.9	4391678.7
74-22	441087.0	4391624.4
57-22[1]	440731.8	4391178.4
57-22b[1]	440634.3	4391058.3
34-23	441969.5	4391690.8
14-23[2]	441408.9	4391766.7
14-23b[2]	441467.7	4391669.0
13-23	441566.2	4391801.3
27-22	440150.4	4391091.5
68-22	440815.5	4390992.0
67-22	440889.5	4391101.4
84-22	441301.7	4391633.9
24-23	441796.6	4391986.9
26-22	440162.7	4391212.5
16-22	439903.2	4391286.2
76-21	439516.9	4391390.0
86-21	439659.7	4391289.0

Well Name (Kettleman No.)	Approximate UTM Coordinates (NAD83)	
	Easting (m)	Northing (m)
67-21	439347.8	4391182.5
1 Wells 57-22 and 57-22b are located on the same well pad. 2 Wells 14-23 and 14-23b are located on the same well pad.		

The well locations are tentative and may need to be adjusted as additional geologic, geophysical and geothermal reservoir information is obtained as new wells are drilled and tested.

2.1.1.1. Construction Procedures and Surface Disturbance

Ormat is proposing 24 production and injection wells from 22 well pads (2 sets of the wells would be located on the same pad). Each well would take approximately 45 days to drill, though difficulties encountered during the drilling process, including the need to re-drill the well, could as much as double the time required to successfully complete each well. Temporary surface disturbance for the 22 proposed well pads would be 4.2 acres per pad, or 92.4 acres in total (22 well pads; * 4.2 acres/pad). After interim reclamation, there would be 2.5 acres of permanent disturbance at each well pad, or 55 acres in total (22 well pads; * 2.5 acres per pad).

Each drill pad would be prepared to create a level pad for the drill rig and a graded surface for the support equipment. Drill pad preparation activities would include clearing, earthwork, drainage and other improvements necessary for efficient and safe operation and for fire prevention. Only those drill pads scheduled to be drilled would be cleared. Clearing would include removal of organic material, stumps, brush and slash, which would be either be removed and taken to an appropriate dump site, or left onsite. Topsoil would be stripped (typically to the rooting depth) and salvaged during the construction of all pads, as feasible. Salvaged topsoil (and cleared organic material, stumps, brush and slash, if saved) would be stockpiled on the pads for use during subsequent reclamation of the disturbed areas.

Reserve pits would be used for the containment and temporary storage of water, drill cuttings and circulating drilling mud during drilling operations. Geothermal fluid produced from the well during flow testing would also drain to the reserve pit.

Reserve pits would be constructed in accordance with best management practices (BMPs) identified in the "Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development (The Gold Book)" (Fourth Edition – Revised 2007) on each pad. Specifically:

- As much as practical, the pit would be located on level ground and away from established drainage patterns, including intermittent/ephemeral drainage ways, and unstable ground or depressions in the area;
- The pit would have adequate storage capacity for safe containment of all produced water, even in those periods when evaporation rates are at a minimum. The design would provide for a minimum of 2 feet of free-board;
- The pit would be fenced or enclosed to prevent access by livestock, wildlife, and unauthorized personnel. If necessary, the pit would be equipped to deter entry by birds. Fences would not be constructed on the levees.
- The pit levees to be constructed so that the inside grade of the levee is no steeper than 1 (vertical):2 (horizonal), and the outside grade no steeper than 1:3.

- The top of levees would be level and least 18 inches wide.
- The pit location would be reclaimed pursuant to the requirements and standards of the surface management agency.

Reserve pits would be constructed in a manner that allows wildlife to escape. Specifically, at least two sides or installed shoots would be sloped 3:1 (horizontal: vertical) or flatter. Alternatively, escape ramps would be installed in two corners. Ramps would be coated with geo-mesh, and maximum distance between any two ramps would not exceed 200 feet. If liquids harmful to birds and bats (based on toxicity, high temperatures, etc) are to be contained in the reserve pits, netting/screening, bird balls or other appropriate measures would be used to preclude access by these species.

During drilling, the reserve pits would be fenced with an exclosure fence on three sides. The drill rig would be located along the fourth side, blocking access to the pit. Temporary fencing would be placed to close exposed areas between the rig and existing fencing. The fourth side would be fenced once the rig has moved and drilling has been completed to prevent access by persons, wildlife or livestock. To prevent small mammals from entering the pits, fences would be tight to the ground and have holes smaller than 2 inches (on the bottom parts of each fence). Fences would also be placed away from the edges of reserve pits on a level surface where possible. The fence would remain in place until pit reclamation begins. For the drilling of each well, the reserve pit would measure approximately 75 feet by 200 feet by 10 feet deep.

2.1.1.2. Operation and Maintenance

Once a well is drilled and well head completed, an appropriately sized industrial grate would be placed over the hole to prevent humans and wildlife (especially small mammals) from falling into the cellar.

Each of the production wells would be equipped with a lineshaft pump to bring the geothermal fluid to the surface under pressure. The electricity to power the wellhead pump motors would be supplied via an insulated electric conductor installed from the power plant to the wellheads along the connecting pipelines.

Wellhead dimensions for the production wells are not expected to exceed a height of fifteen feet above the ground surface or four feet in diameter. Wellhead dimensions for the injection wells would be much smaller (approximately 4 feet in height) since they would not have wellhead pump motors.

An approximately 15-foot by 15-foot by 10-foot high motor control building may be located on the well pad within approximately 50 feet of each production well to house and protect: 1) the auxiliary well control systems; 2) motor switch gear controls and sensors; 3) transmitters; and 4) geothermal fluid treatment systems. The well control systems, data transmitters and geothermal fluid treatment systems used for the injection wells would be placed inside a smaller structure located on the injection well pads.

Sensors would collect key temperature, pressure and flow rate data from each well. These data would be measured for purposes of process control, resource data acquisition, safety and environmental protection. Total well depth and the static depth to water would be obtained upon completion of well construction and testing. During production well operation, flow rate, drawdown, and fluid temperature are recorded. Water quality samples are collected quarterly

and submitted to the NDEP. During injection well operation, sensors wells measure flow rate, temperature and well head pressure. Water quality samples are only collected during testing following well construction to demonstrate that the well was constructed within the geothermal reservoir.

2.1.2. Geothermal Pipelines

The geothermal fluid production and injection pipelines would bring the geothermal fluid from the production wells to the energy plants and deliver the cooled geothermal fluid from the energy plants to the injection wells, respectively. Approximately 4.2 miles of production and injection pipeline are proposed (see Figure 3).

The production and injection pipeline routes generally follow the shortest distance from each well pad to the next well pad or the energy plants in order to minimize the amount of pipe required, reduce heat losses and the energy required to move the fluids, and minimize the amount of ground disturbance. In addition, the proposed pipeline routes generally follow existing or proposed roads to facilitate ongoing monitoring and future maintenance.

However, the final alignment of the pipeline routes would be dictated by the specific wells completed for the project and the need to match fluid characteristics and balance fluid volumes in these pipelines.

2.1.2.1. Construction Procedures and Surface Disturbance

Ormat is proposing 4.2 miles of production and injection pipeline. Assuming a 40 foot wide construction corridor along the length of the pipeline, temporary surface disturbance would be 20.4 acres. After interim reclamation, there would be approximately 10.2 acres of permanent disturbance along the length of the pipeline, as half of the disturbed area could be reclaimed.

Pipeline construction would begin by vertically auguring nominal 24 inch diameter holes into the ground about three to five feet deep at approximately 30 foot intervals along the pipeline route (twin holes for two supports may be drilled at the pipeline anchor points, which would be located at the center of each expansion loop and in between each expansion loop). Dirt removed from the holes would be stockpiled to save for interim reclamation. The steel pipe "sleeper" would be placed in the hole and concrete poured to fill the hole slightly above the ground surface. The steel pipe sleeper would extend above the concrete, averaging approximately one foot above ground surface.

While the concrete is curing, the approximately 30 foot long steel pipe sections would be delivered and placed along the construction corridor. A small crane would lift the pipe sections onto the pipe supports and temporary pipe jacks so that they could be welded together into a solid pipeline. Once welded and the welds tested, the pipe would be jacketed with insulation and an aluminum sheath (appropriately colored, likely covert green, to blend with the area).

When completed, the top of the new geothermal pipelines would average three feet above the ground surface. However, a number of pipeline lengths could be up to six feet in height to accommodate terrain undulations and to facilitate movement of wildlife and livestock through the wellfield.

Electrical power and instrumentation cables for the wells would then either be installed in steel conduit constructed along the same pipe sleepers or hung by cable from pipe along the pipeline route.

The pipelines would be constructed across roads to allow continued vehicle access, as needed. This would typically use the cut and fill method, where a trench would be cut through the road, a prefabricated, "U" shaped, oversized pipe sleeve (containing the fabricated geothermal fluid pipeline with the insulation and metal cladding in place) installed in the trench, the excavated dirt backfilled and compacted around and above the oversize pipe sleeve, and the roadbed material repaired or replaced. Alternatively, and less likely, the pipelines could be constructed across the roads on sleepers (as described above) and the roadbed run up and over the pipeline. This would entail constructing a concrete conduit over a pipeline where it crosses a road, then compacting dirt on either side of the conduit sufficient to ramp the roadbed up and over the conduit to allow traffic to travel over the pipeline.

2.1.2.2. Operation and Maintenance

The pipelines would be periodically inspected for leak detection, safety and vandalism during normal operations. The pipelines also would be subject to periodic ultrasonic thickness testing to detect any substantial thinning of the pipe wall.

2.1.3. Geothermal Power Plant(s) and Substation

The Tungsten Mountain energy plants would each be an approximately 20 MW net rated (24MW gross) geothermal energy plant. The proposed energy plants would each be located on approximately 15 acres within Section 22 T21N, R38E (see Figure 3). An approximately 0.50 acre substation, used to transform generated low voltage electrical energy to the higher voltage required for a gen-tie line, would be constructed within each energy plant boundary.

2.1.3.1. Construction Procedures and Surface Disturbance

Construction activities would be the same at either energy plant site. Preparation activities would begin with clearing, earthwork, drainage and other improvements necessary for commencement of construction. Clearing would include removal of organic material, stumps, brush and slash.

A portion of the energy plant sites and adjacent well pads would be devoted to equipment and materials laydown, storage, construction equipment parking, small fabrication areas, office trailers and parking. Equipment and materials laydown space is required for large turbine parts, structural steel, piping spools, electrical components, switchyard apparatus, and building parts. Mobile trailers or similar suitable facilities (e.g., modular offices) would be brought to the sites to be used as construction offices for owner, contractor, and subcontractor personnel. Approximately 4-5 travel trailers would be on the site and would provide for 24 hour management and emergency response. Typically, the drilling or construction manager, geologist and mud engineer would reside in these travel trailers during the duration of construction or drilling activity. Parking would be provided for construction workers and visitors within each energy plant area.

Temporary utilities would be provided for the construction offices, the laydown area, and the energy plant sites. Temporary construction energy would be supplied by a temporary generator and, if available when the gen tie line is completed, at the site by utility-furnished power. Area

lighting would be provided for safety and security. Drinking water would be imported and distributed daily. Portable toilets would be provided throughout the site, office and travel trailers and would connect to temporary septic holding systems.

The substation footprint would measure up to 250 feet by 175 feet and would be surrounded by an 8 foot tall chain link fence with vehicle and personnel access gates. The surface of the substation would be covered by gravel and the substation equipment would be placed onto concrete foundations. The high voltage equipment would be connected by overhead busbars that are 2 to 4 inches in diameter. A steel dead-end structure within the substation would provide a termination point for the 230 kV interconnection gen tie line. The electrical generator would be connected to the substation via 13.8 kV line(s).

Consistent with safety requirements, energy plant buildings, structures, pipe, etc. would each be painted an appropriate color (likely covert green) to blend with the area and minimize visibility.

2.1.3.2. Operation and Maintenance

The most prominent features of each energy plant, both in height and mass, are the air-cooled condensers. They range between 28 and 35 feet in height and are about two thirds the length of the site. The balance of each plant is an array of pipes and a small building to house electrical equipment. The perimeter of the site is fenced with chain link to prevent unauthorized entry.

Ancillary facilities and energy plant components within each energy plant site include offices, restrooms, the electrical room and control room, maintenance building, condensing fan equipment, geothermal fluids containment basin, electrical substation and other smaller ancillary structures. All buildings housing the offices, electrical room, control room and auxiliary buildings would be a rigid, steel-frame, pre-engineered structure with steel panel walls and a steel roof.

A chain link fence would be installed around the main facility area in order to prevent unwarranted access to the facility by the public and the entering of wildlife into the facility/electrical generation area. The chain link fence would be equipped with controlled-entry gates to allow vehicle egress/ingress as necessary.

Each energy plant would include an electrical substation at which electrical power that is generated at 13.8 kV would pass through a transformer to increase the voltage to 230 kV. The substation would include a 13.8 kV circuit breaker to protect the electric generator, a minimum of 80 megavolt ampere (MVA) 13.8 kV/120 kV transformer, 230 kV potential and current transformers for metering and system protection, and a circuit breaker to protect the substation. A main control building would contain instrumentation and telecommunications equipment.

2.1.4. Gen-Tie Line

Ormat is exploring two gen tie line alternatives: Option 1, Western and Option 2, Eastern. Both alternatives originate at the proposed substation adjacent to the geothermal energy plants and share a "common" line which travels south, parallel to the County Road before forking into two parts, each spur terminating at the proposed Alpine switching station (see Figure 4). The Option 1 route is approximately 16.5 miles long, of which approximately 3,284 feet are on private lands and the remainder is on public lands managed by the BLM. The Option 2 route is approximately 17.0 miles long, of which approximately 1,950 feet are on private lands and the remainder is on public lands managed by the BLM. The proposed gen-tie line, regardless of the route selected,

would require a 300-foot wide ROW (90-foot permanent width and an additional 210-foot temporary width required for construction).

2.1.4.1. Construction Procedures and Surface Disturbance

Regardless of the route selected, the gen-tie would consist of a single 230-kV circuit on direct-burial, self-supporting wooden or steel monopole structures, or would utilize "H frame" structures (standard transmission line construction seen in many parts of the country and gets its name from the H created by the poles and cross arms). Structure heights would be either approximately 55 to 70 feet if a wooden or steel monopole were utilized, or approximately 80 feet for H-frames. Each structure would require a temporary workspace of up to 300 feet by 300 feet and a 30-foot by 40-foot area for line construction equipment. Temporary surface disturbance is assumed to be approximately 2.1 acres per structure; however most of this area would be reclaimed following construction.

For the 16.5 mile Option 1 line, approximately172 structures would be needed and total temporary surface disturbance would be 361 acres. Following interim reclamation, total permanent surface disturbance is assumed to be 2.1 acres. For the 17.0 mile Option 2 line, approximately 178 structures would be needed and total temporary surface disturbance would be 374 acres. Following interim reclamation, total permanent surface disturbance is assumed to be 2.2 acres.

The structures would be installed including tangent, angle and dead-end poles. Angle and dead-end structures would be assembled and insulators would be attached to the pole. The poles would be erected with a truck-mounted crane to lift and set the structure after it is assembled.

The 230-kV gen-tie would consist of a single conductor per phase using 397.5 MCM aluminum conductor steel-reinforced (ACSR) "Ibis" and optical ground wire. The overhead conductors would be non-specular to reduce sunlight reflection and minimize impacts on visual resources.

Each structure would carry a single overhead ground wire/fiber optic cable for lightning protection and fiber optic communications. The overhead ground wire measures approximately 0.75 inches in diameter and is constructed of concentric layers of galvanized steel wires surrounding a hollow core which contains 12 to 48 fiber optic strands (depending on final requirements). Metering and communications equipment would be required at each generator site.

In order to establish work areas where poles and conductors would be installed, vegetation clearing and grading within the ROW could be necessary. In order to stage equipment and conduct work, the structure work areas and stringing sites would require a relatively flat surface; therefore, the areas could be graded and gravel or soil could be imported to achieve the necessary elevation.

Construction laydown areas would be located in previously disturbed areas whenever possible (i.e., along access roads or on well pads). At each location, a work area would be cleared and leveled only if necessary. In most relatively level terrain, this would not be needed. Structure pieces would be delivered to the laydown area where workers would assemble the pole and attach insulators and hardware. The structure would be erected using a crane from the staging area.

Temporary material storage yards would be required for construction materials. These staging areas would be located at existing well pads or the power plant site and would serve as reporting locations for workers, parking spaces for vehicles, and storage spaces for equipment and materials. Structural materials such as structure steel, hardware, foundation material, spools of conductor, and shield wire, would be hauled by truck into the yard. A crane or forklift would

be required to unload and transport the materials. Construction materials would be delivered by truck from the yard to lay down areas. From these areas, materials would be brought to structure sites as needed. Crews would load the material required for the workday thus limiting the weight hauled on the access roads. This would limit the impact and rutting on access roads caused by the use of heavy vehicles.

Materials, such as gen-tie poles, insulators, hardware, and guy wire anchors, would be delivered from the laydown area to each gen-tie structure site. Assembly crews would attach insulators, travelers, and hardware to form a complete structural unit. Erection crews would use a large, truck-mounted mobile crane to place the structures directly into the ground, depending on the soil conditions and results of geotechnical surveys. The poles directly embedded in the ground would be set in holes that are approximately 3 feet wide and 10 feet deep. These holes would be backfilled with native or imported materials. Guy wires to support the angle poles would be used to keep the structures vertical. As a safety precaution, guy wires would be made more visible if they cross over designated access roads. Signs, flagging, or other marking would be used to indicate the presence of guy wires.

Conductor and shield wire would be delivered on reels by flatbed truck to the various conductor pulling sites along the ROW. Other equipment required to install the conductor would include reel stringing trailers, tensioning machines, pullers, and several trucks including a bucket truck.

The conventional method of installing conductor and shield wire is to pull out a sock line or "pullrope" along the route of the line and manually lift the rope into stringing sheaves. The rope is brought to a puller at one end and a tensioner on the other end. The tensioner holds the wire reels and maintains enough tension to keep the wire off the ground and vegetation while the puller pulls the wire through the stringing sleeves. This method may require some overland travel between structures. When overland travel is required for this purpose, an ATV or similar type vehicle with would be used.

Temporary guard structures would be installed to ensure that the conductors do not drop into the road or other locations that could result in a safety hazard. Splicing would occur between conductor spools. After the conductors are pulled in, conductor tension would be adjusted to properly sag the conductors. The conductors would then be clipped to the insulators and the stringing roller wheels removed.

Typically, conductor pulling sites for stringing the conductor would be spaced at 15,000 feet to 20,000 feet intervals. However, distances between each site would vary depending on the geography and topography and environmental sensitivity of the specific area, the length of the conductor pull, and the accessibility by equipment. Pulling sites would require a temporary working area. At each pulling site stringing equipment would be set up approximately 250 feet from the initial structure for leveraging the conductor pull safely. Angle structure pulling sites would be contained within the 210-foot temporary ROW.

Sites for tensioning equipment and pulling equipment are typically areas approximately 300 feet by 300 feet in size. However, when construction occurs in the steep and rough terrain, these sites may require larger, less symmetrical pulling and tensioning sites.

2.1.4.2. Operation and Maintenance

Operations and maintenance personnel would maintain the proposed gen tie system by monitoring, testing, and repairing equipment.

If conductor failure occurs, power would be automatically removed from the line. Lightning protection is provided by shield wires along the line.

Maintenance would include gen tie line and pole repair and/or replacement. Ormat would inspect the gen tie line from a light, off road vehicle and make repairs and/or facility replacement, as necessary. Ormat would not routinely travel within the ROW. Equipment damaged by vandals would be replaced immediately.

Emergency maintenance, such as repairing downed wires during storms and correcting unexpected outages, would be performed by Ormat or licensed maintenance contractors. Ormat would respond to emergency conditions along the proposed route within a few hours after an incident. The length of time needed to make the repairs would depend on the nature of the outage.

2.1.5. Site Access and Road Construction

Principal access to the Project Area is from a northeast trending County Road (Alpine Road) off of U.S. 50. The Project Area is traversed by numerous roads and "two tracks." To the extent practicable, existing access would be used for Project construction and operation.

Up to approximately 3,230 feet of new access roads with a 20 foot wide road bed would be constructed using a dozer and/or road grader (see Figure 3). The total estimated area of surface disturbance required for new access road construction, assuming a 25 foot wide area of disturbance would be about 1.9 acres (3,230 ft. total length * 25 ft. width).

Constructed access roads crossing existing drainages may require installation of culverts. Culvert installation would follow BLM design criteria and would be constructed pursuant to standards established in the Gold Book (USDI and USDA 2007).

For the geothermal operations, up to 2.2 miles of existing access roads may need to be improved (i.e. widened, graded or bladed) to maintain a drivable roadbed and up to 0.40 miles of existing road for access to the new switching station would need to be improved (see Figure 3). The total estimated area of surface disturbance associated with road improvement activities would be about 1.5 acres (13,665 ft. total length * 5 ft. additional disturbance width).

2.1.6. Water Requirements and Source

Water required for construction activities would be obtained from geothermal fluid, an established private ranch source and trucked to each construction or drill site, or a shallow water well(s) drilled from one or more of the proposed drill sites as approved by the BLM. As necessary, temporary construction water pipeline would be utilized and laid on the side of the existing roads and no additional surface disturbance is anticipated.

Approximately 50,000 gallons per day would be consumed during the first 2 months of construction of the energy plants and 5,000 gallons per day thereafter for 6 months. Up to approximately 325 gallons of water, to be used for septic purposes, would be consumed per day for the geothermal operations (0.37 acre feet per year). This water would be obtained from the sources identified above and would be trucked to the power plants and stored onsite. Drinking water would be purchased form a commercial bottled water source.

2.1.7. Aggregate Requirements and Source

As much as possible, native materials (derived from grading to balance cut and fill) would be used for site and road building materials. Approximately 160,000 cubic yards of surfacing material may be needed for construction of the Project.

Aggregate material would be obtained from one of two sources: a private pit located off of Alpine Road, approximately 5.5 miles north of U.S. 50, or from an approximately 5-acre area located within Section 22 of the Project Area. A Mineral Materials permit would be needed for any aggregate pit located on public land managed by the BLM.

2.1.8. Project Workforce and Schedule

Construction of the Project is expected to take approximately 8 months to complete, commencing only after all required permits and authorizations have been secured. Construction of the geothermal portion of the Project would likely require a maximum of up to 50 workers, with an average of 3-4 workers after grading and excavation. Construction of the gen-tie line would require up to 7 workers, though additional support personnel, including construction inspectors, surveyors, project managers and environmental inspectors may be required.

Once operating, the Project would have a total staff of approximately 20 employees, though approximately 1-2 employees may be onsite at a given time.

Except for those residing onsite during the construction and drilling activities (i.e. the drilling or construction manager, geologist and mud engineer), it is expected that most workers and employees would reside, dine, buy supplies, etc. from either Cold Springs, Middlegate and/or Fallon.

2.1.9. Project Decommissioning and Reclamation

Once drilling is complete, approximately half of the drill pad area can be reclaimed, but the remaining half must be kept clear for ongoing operations and the potential need to work on or re drill the well. During the operations phase of the project, the remaining 2.5 acre well pads would be fenced on all four sides to limit access, and in most cases the sump would remain on the pad to be used if a well needs to be flowed. The portions of the cleared well sites not needed for operational and safety purposes would be recontoured to a final or intermediate contour that would blend with the surrounding topography as much as possible. Areas able to be reclaimed would be ripped, tilled, or disked on contour, as necessary and reseeded with a BLM approved seed mixture. The stockpiled topsoils would also be spread on the area to aid in revegetation.

After the well drilling and testing operations are completed, the liquids from the reserve pits would either naturally evaporate or be removed as may be necessary (i.e. pumped into another well) to reclaim the reserve pits. The solid contents remaining in each of the reserve pits, typically consisting of non-hazardous, non-toxic drilling mud and rock cuttings, would be tested to confirm that they are not hazardous. Typical tests may include the Toxicity Characteristic Leaching Procedure (TCLP) (EPA Method 1311), tested for heavy metals; pH (EPA method 9045D); Total Petroleum Hydrocarbons/Diesel (EPA Method 8015B); and Oil and Grease (EPA Method 413.1). If the test results indicate that these solids are non-hazardous, the solids would then be mixed with the excavated rock and soil and buried by backfilling the reserve pit. Hazardous materials,

if any, would be taken to a "permitted TSD facility" as identified on the Nevada Division of Environmental Protection, Bureau of Waste Management website.

At the end of Project operations the wells would be plugged and abandoned as required by Nevada Division of Minerals (NDOM) regulations. Abandonment typically involves filling the well bore with clean, heavy abandonment mud and cement until the top of the cement is at ground level, which is designed to ensure that fluids would not move across these barriers into different aquifers. The well head (and any other equipment) would then be removed, the casing cut off well below ground surface and the hole backfilled to the surface.

Reclamation of the roads would include ripping, tilling or disking the roads, and recontouring the road back to the original contour. Any stockpiled top soil would be added that area reseeded, other techniques to improve reclamation success such as scarifying, replacing topsoil, pitting and mulching, may be used.

Pipeline reclamation would include removing all pipeline and supports, and breaking up the foundations and burying them. Final reclamation would also include compacting the fill over the buried foundations, regrading cut and fill slopes to restore the original contour, replacing topsoil and revegetating the areas with a BLM approved seed mixture.

The end goal of the final reclamation would be to return the site as close as possible to the conditions prior to geothermal development. All other above ground facilities would be completely removed from the site, and the concrete foundations would be broken and buried in place. All areas of surface disturbance associated with the geothermal development project would be recontoured and reseeded with a BLM approved seed mixture.

Ultimately, Ormat would prepare for NDOM approval for the plugging and abandoning of the wells, and then implement, a final site reclamation plan. The plan would address restoring the surface grades, surface drainage and revegetation of cleared areas largely as described above. Stormwater diversion would remain in place until successful revegetation is attained.

Should the geothermal plant be decommissioned and the interconnection is no longer needed, the gen-tie line, including support structures, would be removed and all disturbed areas would be reclaimed, recontoured, and seeded with a BLM approved seed mixture.

2.1.10. Summary of Disturbance

Table 2 summarizes the temporary and permanent surface disturbance for the Project components as identified in the preceding sections:

Table 2: Summary of Surface Disturbance

Project Component	Temporary Disturbance (ac.)	Permanent Disturbance (ac.)
Geothermal Wells	92.4	55.0
Geothermal Pipelines	20.4	10.2
Geothermal Power Plants	30.0	30.0
Access Roads	3.4	3.4
Gen-Tie Line (Option 1, Western)	366.0	7.1
Gen-Tie Line (Option 2, Eastern)	381.0	7.2
Aggregate Source	5.0	0
Total (with Option 1)	**517.2**	**105.7**
Total (with Option 2)	**530.2**	**105.8**

2.1.11. Adopted Protection Measures (APMs)

Ormat would comply with all geothermal lease and ROW grant stipulations. In addition, Ormat would implement the following additional adopted protection measures (APMs):

- Water would be applied to the ground during the construction and utilization of the drill pads, access roads, and other disturbed areas as necessary to control dust.
- Portable chemical sanitary facilities would be available and used by all personnel during periods of well drilling and/or flow testing, and construction. These facilities would be maintained by a local contractor.
- To prevent the spread of invasive, non-native species, all contractors would be required to power-wash their vehicles and equipment, including body and undercarriage, prior to entering BLM-administered lands.
- Prior to construction, Ormat would submit to BLM an invasive plant management plan to monitor and control noxious weeds. At a minimum, the plan would incorporate the following measures:
    - Existing weed infestations would be treated prior to disturbance. The location of the weeds would be communicated to the Stillwater Field Office weed coordinator, and treatment methods and herbicides used would be discussed prior to treatment. Infestations would be either avoided or treated prior to disturbance.
    - Herbicides would be applied per label instructions.
    - All personnel applying herbicides would either be certified by the BLM and/or the State of Nevada, or they would be supervised by a BLM or State of Nevada Certified Applicator.
    - Bureau or other personnel applying herbicides would use personal protective equipment while spraying or handling herbicides.
    - Herbicide application operations would be suspended when wind speed exceeds 6 miles per hour or when precipitation is imminent.
    - Some treatment areas could be signed, if needed, indicating the herbicide used and the date of treatment. Areas which that are isolated and/or receive very little use by human beings would not be signed.
    - During herbicide treatments, a pre-application sweep of the area would be completed (i.e., looking for nesting birds). Any areas that become infested with weeds during construction would be mapped and treated. If herbicide treatments are to occur during the migratory bird nesting period (March 1 to July 31 for raptors and April 1 to July 31 for all other avian species), a pre-disturbance migratory bird nest survey would occur. All nest surveys would be completed by a BLM-approved biologist.
- Any infestations of noxious weed species discovered during construction or operation would be treated prior to disturbance. The location of the weeds would be communicated to the Stillwater Field Office weed coordinator, and treatment methods and herbicides used would be discussed prior to treatment.

- All construction and operating equipment would be equipped with applicable exhaust spark arresters. Fire extinguishers would be available on the active sites. Water that is used for construction and dust control would be available for firefighting. Personnel would be allowed to smoke only in designated areas.
- Following project construction, areas of disturbed land no longer required for operations would be reclaimed to promote the reestablishment of native plant and wildlife habitat.
- Any areas containing cultural resources of significance will be avoided. Ormat employees, contractors and suppliers will be reminded that all cultural resources are protected and if uncovered shall be left in place and reported to the Ormat representative and/or their supervisor.
- One archaeological monitor, funded by Ormat and contracted through the Tribe, will be present during all initial ground-disturbing activity.
- One tribal monitor, funded by Ormat and contracted through the Tribe, will be present during all initial ground-disturbing activity.
- A buffer of approximately 30 to 50 meters will be established around eligible and unevaluated cultural sites that lie close to project activities. When initial construction is close to the buffered areas, one archaeological monitor and/or one tribal monitor will be present to ensure that eligible and unevaluated cultural sites are not disturbed.
- If previously unrecorded cultural resources are encountered during surface disturbing activities, all surface disturbing activities at the location of the discovery will cease within 100 meters/330 feet of the discovery, and the BLM would be notified. No surface disturbing activities within that buffered distance of the discovery will be allowed until the BLM authorized officer issues a Notice to Proceed (NTP), based upon the evaluation, mitigation, as necessary, and the acceptance of a summary description of the fieldwork performed for the discovery situation.
- The proposed gen tie line would also provide raptor protection in compliance with the standards described in the "Suggested Practices for Raptor Protection on Power Lines, The State of the Art in 2006" (APLIC 2006) and "Reducing Avian Collisions with Power Lines" (APLIC 2012).
- Within areas mapped as greater sage-grouse OHMA, Ormat and the applicable energy company would install anti-perch and anti- nesting devices on the gen tie line components.
- All power poles would utilize BLM-approved raptor deterrents.
- Construction noise would be minimized through the use of noise arresters and mufflers on equipment which may typically generate greater noise levels (such as on generators and the drill rig, as appropriate).
- Ormat would obtain and comply with an Underground Injection Control permit, as appropriate.
- During well drilling, the reserve pits would be fenced on three sides, per the Gold Book standard. Once drilling has been completed, the fourth side would be fenced. Additionally, Ormat would install a smaller-mesh barrier/wildlife deterrent fence. All fencing would remain in place until reserve pit reclamation begins.
- Speed limits of 20-25 mph would be maintained for all Project related travel through the Project Area (USDI and USDA 2007).

- A Fire Contingency Plan and Spill or Discharge Contingency Plan have been submitted, and would be complied with.

2.2. Alternatives Considered but not Analyzed in Detail

No other reasonable alternatives were identified. The renewable energy related Project components were sited to minimize surface disturbance and environmental impacts, and the gen-tie options are also the shortest and most direct route to the point of interconnection. Further, geothermal resources are naturally occurring phenomena and thus site specific, which dictates that utilization facilities be located proximal to the resource.

2.3. No Action Alternative

Under the No Action Alternative none of the plans and applications filed by Ormat for the Tungsten Mountain Geothermal Development Project would be approved by the BLM. The Proposed Action would not be implemented as proposed on federal lands, and none of the potential environmental effects of implementing the Proposed Action would occur. Geothermal exploration well drilling and testing activities, as approved under the Tungsten Mountain Geothermal Exploration EA (BLM 2012a), are ongoing and would be allowed to continue (see Section 1.3: Relationships to Statutes, Regulations, Plans and Environmental Analysis).

Chapter 3. Affected Environment and Environmental Consequences

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This chapter identifies and describes the current condition and trend of elements or resources in the human environment which may be affected by the Proposed Action and the environmental consequences or effects of the action.

3.1. General Setting

The Project Area is located on the northwestern side of the Edwards Creek Valley, which hosts a large lake bed, or playa. The valley has a northeast-southwest orientation and is bordered by the Clan Alpine Mountains on the northwest, the Desatoya Mountains to the southeast, and the New Pass Mountains to the east (Geological Survey 1964). The Project Area is located in the foothills of the Clan Alpine Mountains, on the fan piedmont, below the old Tungsten Mountain mining district, and above the playa surface, at elevations ranging from approximately 5,200 feet to 5,700 feet above mean sea level. The Project Area is located approximately 36 miles west of the town of Austin, NV (see Figure 1).

Climate in the Project Area is semi-arid. Climate data from Middlegate (29 aerial miles west of the Project Area) indicates that the average annual precipitation is 5.6 inches, with average temperatures ranging from 16.2 degrees Fahrenheit (°F) in January to 92.0 °F in July (WRCC 2015).

3.2. Supplemental Authorities

Appendix 1 of BLM's NEPA Handbook (H-1790-1) identifies Supplemental Authorities that are subject to requirements specified by statute or executive order and must be considered in all BLM environmental documents. The table below lists the Supplemental Authorities and their status in the Project Area. Supplemental Authorities that may be affected by the Proposed Action are further described in this EA.

Table 3: Supplemental Authorities

Resource	Present Yes/No	Affected Yes/No	Rationale
Air Quality	Yes	Yes	To be analyzed in the EA, see Section 3.4.1.
Areas of Critical Environmental Concern	No	No	Not present in the Project Area. No further evaluation is required.
Cultural Resources	Yes	No	Discussion provided in Section 3.3.1.
Environmental Justice	No	No	No low income or minority populations would be impacted by the proposed Project as none are located in the vicinity.
Farm Lands (prime or unique)	No	No	Not present in the Project Area. No further evaluation is required.
Floodplains	No	No	Not present in the Project Area. No further evaluation is required.
Invasive, Nonnative Species	Yes	No	Adherence to Adopted Protection Measures and permit stipulations would result in no impacts to invasive, nonnative species.
Migratory Birds	Yes	Yes	To be analyzed in the EA, see Section 3.4.7.
Native American Religious Concerns	Yes	No	Discussion provided in Section 3.3.2.
Threatened or Endangered Species (plants and animals))	No	No	Not present in the Project Area. No further evaluation is required.

Resource	Present Yes/No	Affected Yes/No	Rationale
Wastes, Hazardous or Solid	Yes	No	Adherence to APMs and permit stipulations would result in no impacts from hazardous or solid waste.
Water Quality (Surface/Ground)	Yes	Yes	To be analyzed in the EA, see Section 3.4.11.
Wetlands/Riparian Zones	No	No	Not present in the Project Area. No further evaluation is required.
Wild and Scenic Rivers	No	No	Not present in the Project Area. No further evaluation is required.
Wilderness/WSA	Yes	Yes	To be analyzed in the EA, see Section 3.4.14.

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**See H-1790-1 (January 2008) Appendix 1 Supplemental Authorities to be Considered.*

Supplemental Authorities determined to be Not Present or Present/Not Affected need not be carried forward or discussed further in the document.

Supplemental Authorities determined to be Present/May Be Affected may be carried forward in the document.

3.3. Resources or Uses Other Than Supplemental Authorities

The following resources or uses, which are not Supplemental Authorities as defined by BLM's Handbook H-1790-1, are present in the area. BLM specialists have evaluated the potential impact of the Proposed Action on these resources and documented their findings in the table below. Resources or uses that may be affected by the Proposed Action are further described in this EA.

Table 4: Resources or Uses Other Than Supplemental Authorities

Resource or Issue**	Present Yes/No	Affected Yes/No	Rationale
Special Status Species (plants and animals)	Yes	Yes	To be analyzed in the EA, see Section 3.4.8.
Fire Management	No	No	Not present in the Project Area. No further evaluation is required.
Forest Resources	No	No	Not present in the Project Area. No further evaluation is required.
General Wildlife	Yes	Yes	To be analyzed in the EA, see Section 3.4.6.
Land Use Authorization	Yes	Yes	To be analyzed in the EA, see Section 3.4.15.
Lands with Wilderness Characteristics	No	No	Not present in the Project Area. No further evaluation is required.
Livestock Grazing	Yes	Yes	To be analyzed in the EA, see Section 3.4.9.
Minerals	Yes	Yes	To be analyzed in the EA, see Section 3.4.12.
Paleontological	No	No	Paleontological resources would not be impacted by proposed Project operations as the Project Area is does not host supporting geologic structures for vertebrate paleontological resources.
Recreation	Yes	No	Recreation in the Project Area and adjacent lands is dispersed and therefore should not be impacted.
Socioeconomics	Yes	Yes	To be analyzed in the EA, see Section 3.4.16.
Soils	Yes	Yes	To be analyzed in the EA, see Section 3.4.5.

Resource or Issue**	Present Yes/No	Affected Yes/No	Rationale
Travel Management	Yes	No	Public access to Augusta, Stone and Smooth Canyons would remain open. Alternative routes will be provided if existing routes are impacted. No further evaluation is required.
Vegetation	Yes	Yes	To be analyzed in the EA, see Section 3.4.4.
Visual Resources	Yes	Yes	To be analyzed in the EA, see Section 3.4.13.
Wild Horses and Burros	Yes	Yes	To be analyzed in the EA, see Section 3.4.10.
Global Climate Change	Yes	No	There is public and scientific debate about human caused contributions to global climate change, no methodology currently exists to correlate greenhouse gas emissions (GHG) and to what extent these contributions would contribute to such climate change.

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***Resources or uses determined to be Not Present or Present/Not Affected need not be carried forward or discussed further in the document.*

Resources or uses determined to be Present/May Be Affected may be carried forward in the document.

3.3.1. Cultural Resources

Cultural resources include historic and prehistoric sites of interest and may include structures, archaeological sites, or religious sites of importance to Native American cultures. The U.S. National Park Service defines archaeological and historic resources as "the physical evidences of past human activities, including evidences of the effects of that activity on the environment. Factors identifying age, location and context of a site may make it culturally significant when looked at in conjunction with its capacity to reveal information through the investigatory research designs, methods, and techniques used by archaeologists." Ethnographic resources are defined as any "site, structure, landscape, object or natural resource feature assigned traditional legendary, religious, subsistence, or other significance in the cultural system of a group traditionally associated with it" (U.S. National Park Service 1998).

The National Historic Preservation Act of 1966, (NHPA) as amended, and the Archaeological Resources Protection Act of 1979 (ARPA) are the primary laws regulating preservation of cultural resources. Section 106 of the NHPA requires federal agencies to take into account the effects of their actions on properties listed or eligible for listing on the National Register of Historic Places. Regulations codified in 36 CFR 800 define how eligible properties or sites are to be dealt with by federal agencies or other involved parties. These regulations apply to all federal undertakings and all cultural resources. The ARPA sets a broad policy that archaeological resources are important to the nation, as well as locally and regionally, and should be protected. The purpose of the ARPA is to secure the protection of archaeological resources and sites that are on public lands and Native American lands. The law applies to any agency that receives information that a federally assisted activity could cause irreparable harm to prehistoric, historic, or archaeological data and provides criminal penalties for prohibited activities.

In order to identify historic properties within the Project Area, Ormat contracted Cardno ENTRIX to conduct a cultural resource inventory. CardnoEntrix conducted a literature review and Class

III cultural resource inventory of approximately 1,192 acres of the Project Area in Churchill County, Nevada. This acreage includes the 994 acres originally proposed, an additional 179 acre addendum, as well as an additional 19 acres to re-route the Area of Potential Effect (APE) around two historic graves. Private land was not considered a part of the APE nor calculated into the APE acreage. Fieldwork for this project was conducted between April and July of 2014 and was carried out under the authority of Nevada State Antiquities Permit 471 (BLM permit number N-83340).

The current inventory resulted in the identification of 51 new sites (CrNV-03-9469 [26CH3841] through CrNV-03-9519 [26CH3891), updated three previously recorded sites (CrNV-31-3495 [26CH933], CrNV-03-8112 [26CH3288], and CrNV-03-7771 [26CH3684]), performed revisits on seven previously recorded sites (CrNV-31-3494 [26CH932], CrNV-31-3496 [26CH934], CrNV-03-8105 [26CH3281], CrNV-03-8111 [26CH3287], CrNV-03-8115 [26CH3291], CrNV-03-8427 [26CH3364], and CrNV-03-8429 [26CH3366] and identified 49 isolated finds.

The 51 newly recorded sites include 13 prehistoric sites, 35 historic sites, and three multi-component sites. All 13 of the newly recorded prehistoric sites are lithic scatters, some of which include formal and/or temporally diagnostic tools. The newly recorded historic sites include 19 refuse scatters, ten roads, two mining-related sites, two ditches, one historic fence, and one historic campsite. The three multi-component sites include prehistoric lithic scatters with historic refuse scatters. Two sites (OTM-024 and OTM-025) were identified on private land contained within the Clan Alpine Ranch area but subsequent analysis determined these sites are not within the APE. Three of the newly recorded sites (CrNV-03-9478 [26CH3850], CrNV-03-9508 [26CH3880], and CrNV-03-9512 [26CH3885]) have been recommended eligible for inclusion in the NRHP. Site CrNV-03-9478 (26CH3850) is a discrete lithic scatter containing three temporally diagnostic projectile points and the possibility of subsurface deposits and has been recommended eligible to the NRHP. Site CrNV-03-9508 (26CH3880) is a small historic refuse scatter with an historical grave that is likely associated with Clan Alpine. This site, due to the presence of the grave, has been recommended eligible to the NRHP. Site CrNV-03-9512 (26CH3885) is an early alignment of the historic Lincoln Highway and has also been recommended eligible to the NRHP.

The three previously recorded sites that were updated during the current inventory include sites CrNV-31-3495 (26CH933), CrNV-03-8112 (26CH3288), and CrNV-03-7771 (26CH3684). Site CrNV-31-3495 (26CH933) was previously recorded as a small lithic scatter containing only five flakes. The current update of this site identified an additional 14 pieces of lithic debitage. Site CrNV-03-8112 (26CH3288) was previously recorded as an historic mill complex with standing structures. Upon the current update of this site, the mill was found to have been deconstructed and because this resource has been impacted to such an extent, it is no longer an architectural resource and is now an ineligible archaeological resource. Site CrNV-03-7771 (26CH3684) was first recorded as a two-track road identified on an 1879 General Land Office (GLO) survey map of the area. The current update of this site extended the road further south than previously recorded. All three of the previously recorded sites were recommended not eligible for inclusion in the NRHP by the parties that first recorded them. While all of these sites were expanded upon, the additional information gained from the current updates does not warrant a change in the previously recommended eligibility justifications. Therefore, the BLM has determined that all three sites are not eligibilt. All seven of the revisited sites that did not require updating are recommended not eligible for inclusion in the NRHP.

Identified isolated finds include 36 historic artifacts, nine prehistoric artifacts, and four historic features. Prehistoric isolated artifacts include two undetermined projectile points and two biface fragments, one Rosegate Series projectile point, and four mid- to late-stage biface reduction

flakes. Isolated historic artifacts consist primarily of cans, beverage bottles, and other road-toss, though a horseshoe and mining-related debris such as a machine guard, wire spool, and galvanized metal exhaust stack cap were also observed. The historic features include one prospect pit, two rock cairns, and an historical grave. All of these isolated finds, with the exception of the historical grave (ISO-OlO), are categorically not eligible for inclusion in the NRHP per the State Protocol Agreement between the BLM and Nevada SHPO (2012: Appendix E).

Ormat would avoid any areas containing cultural resources of significance, including unevaluated sites and all historic properties that have been recommended as eligible for inclusion to the NRHP. Also, a buffer of approximately 30 to 50 meters would be established around eligible and unevaluated cultural sites that lie close to project activities. When initial construction is close to the buffered areas, one archaeological monitor and one tribal monitor would be present to ensure that eligible and unevaluated cultural sites are not disturbed. If previously unrecorded cultural resources are encountered during surface-disturbing activities, all surface-disturbing activities at the location of the discovery will cease within 100 meters/330 feet of the discovery, and the BLM would be notified. Further, Ormat employees, contractors, and suppliers would be reminded that all cultural resources are protected and if uncovered shall be left in place and reported to the Ormat representative and/or their supervisor (see Section 2.1.11).

Coordination between the BLM, Ormat, and Cardno ENTRIX during the inventory resulted in re-routes of the proposed gen tie line around site OTM-049 and Isolated Find ISO-OlO to avoid impacting these historic properties. These re-routes avoid the two historic properties (CrNV-03-9513 [26CH3885] and ISO- 010) by a distance of at least 30 meters.

Following implementation of the above adopted environmental protection measures this project should have no adverse effects to historic properties (36 CFR 800.4). All sites determined not eligible for inclusion in the NRHP do not require further treatment. Therefore, the cultural resources will not be further analyzed.

3.3.2. Native American Religious Concerns

Consultation with the Fallon Paiute-Shoshone Tribe (FPST) was initiated with a letter sent to Alvin Moyle, FPST Tribal Chairman, on February 15, 2011, and again with a letter sent to Chairman Len George on July 10, 2015, and included a description of the Proposed Action, a map of the Project location, and an invitation for comments or feedback regarding the Project. In 2011, and again in 2015, the Yomba Shoshone Tribe deferred to the FPFST for consultation.

Formal face-to-face consultation was initiated through an in-person meeting held between Terri Knutson, BLM SWFO Field Manager, and the FPST Tribal Council on April 27, 2011 and again on March 17, 2015. Additional face-to-face consultation meetings took place between Terri Knutson, Jason Wright, and the FSPT Cultural Committee on March 20, 2015; April 10, 2015; June 26, 2015; September 18, 2015;November 20, 2015, March 4 and March 18, 2016.

Field trips to the project location were attended by Jason Wright, BLM archaeologist, and Ray Stands, FPST cultural coordinator on several occasions, including March 29, 2011; May 10, 2011; and July 12, 2011; by Jason Wright, BLM Archaeologist, various BLM staff specialists, and Donna Cossette, FPST Cultural Committee Chair, on April 10, 2015; and by Knutson and Wright with Brenda Hooper, FPST Cultural Committee Chair and FPST Cultural Committee members, and Darlene Hooper and Yomba Shoshone Tribal Members on March 4, 2016.

Native American consultation with the FPST is ongoing, but no traditional cultural properties or sacred sites have been identified within the Project Area. Ongoing consultation could result in new information and additional mitigation measures. If previously unidentified and/or undiscovered gravesites, traditional cultural properties, artifacts, or similar occur, Ormat would adhere to all lease stipulations (see Appendix A) and adopted protection measures (see Section 2.1.11). These measures and stipulations include following procedures set forth in 43 CFR Part 10, Native American Graves Protection and Repatriation Regulations.

3.4. Resources Present and Brought Forward for Analysis (All Resources)

The following resources are present in the area and may be affected by the Proposed Action:

- Air Quality;
- Migratory Birds;
- Water Quality (Surface/Ground);
- Wilderness/Wilderness Study Areas;
- Special Status Species (plants and animals);
- General Wildlife;
- Land Use Authorizations;
- Livestock Grazing;
- Minerals;
- Socioeconomics;
- Soils;
- Vegetation;
- Visual Resources; and
- Wild Horses and Burros

3.4.1. Air Quality

3.4.1.1. Affected Environment

The U.S. Environmental Protection Agency (EPA) has developed the National Ambient Air Quality Standards (NAAQS) for criteria pollutants, which include nitrogen dioxide, sulfur dioxide, carbon monoxide, ozone and particulate matter less than 10 microns (PM10). The NAAQS specify the concentration and duration for which pollutants may cause adverse health effects.

The Nevada Department of Conservation and Natural Resources, Division of Environmental Protection (NDEP), Bureau of Air Pollution Control (BPAC) has been delegated responsibility by

both the EPA and the State of Nevada to regulate air pollution and emissions of air pollutants in all areas of the State (other than Clark and Washoe counties).

Air quality in Churchill County has been designated as "attainment/unclassified" for all criteria pollutants, which means that the County either meets, or is generally assumed to meet, the applicable federal ambient air quality standards (U.S. EPA 2015).

The Project Area is not located in or adjacent to any mandatory Federal Class I air quality areas, U.S. Fish and Wildlife Service Class I air quality units, or American Indian Class I air quality lands.

3.4.1.2. Environmental Consequences

3.4.1.2.1. Proposed Action

The primary pollutant of concern during construction activities would be particulates in the form of fugitive dust, which would be generated from earth-moving and travel on unpaved roads during construction.

As the surface disturbance associated with the proposed Project would be greater than 5 acres, a NDEP-BAPC Surface Area Disturbance (SAD) Permit would be required. This permit would document the areas of proposed disturbance and the best practical dust control methods to be used. Best practical dust control methods would include use of water trucks to spray water on disturbed areas on a regular basis; pre-watering of areas to be disturbed; graveling of roadways, storage areas and staging areas; posting and limiting vehicle speeds to 20-25 miles per hour, and use of wind fences to reduce wind speeds and the generation of fugitive dust. These activities, and compliance with the issued SAD permit, would minimize fugitive dust emissions during Project activities.

During Project operations, with a binary geothermal energy plant, some of the binary working fluid (pentane) would be released to the atmosphere from gaskets, rotating seals, and flanges during operations. Also during normal operations, a small quantity of air would enter the pentane loop in the air cooled condenser. This air leaked into the pentane loop would be discharged back to the atmosphere through a stack along with a small quantity of pentane. During major maintenance activities on the pentane side of the binary energy plant units, the liquid pentane would first be transferred to the pentane storage tank. However, not all of the pentane can be removed in this manner, and the residual pentane would escape to the atmosphere when the binary energy plant unit is opened for repair. All of these releases, estimated to average about 12 tons per year, are regulated through a permit issued by BAPC to ensure that these emissions do not result in ambient concentrations of ozone (which can be created from the reaction of ambient concentrations of hydrocarbons and NOx) in excess of the applicable federal ambient air quality standards.

3.4.1.2.2. No Action Alternative

Under the No Action alternative, the Tungsten Mountain Geothermal Development Project as currently proposed would not be constructed or operated, and the affected environment for the Proposed Action would remain the same. Geothermal exploration well drilling and testing activities, as approved under the Tungsten Mountain Geothermal Exploration EA (BLM 2012a), are ongoing and would be allowed to continue (see Section 1.3: Relationships to Statutes, Regulations, Plans and Environmental Analysis).

3.4.2. Vegetation

3.4.2.1. Affected Environment

The Natural Resources Conservation Service ecological sites and Southwest Regional Gap Analysis Project (SWReGAP) communities were downloaded for the survey area. Ecological Site Descriptions (ESD) describe the potential vegetation community and are based on soils, topography, and climate. ReGAP communities are based on ground-truthed remotely sensed data. The mapped ecological sites and ReGAP communities were verified and boundaries were corrected in the field. The refined vegetation community types described for the survey area were then correlated to ESDs.

A heterogeneous landscape is typical of the Great Basin, and is present throughout the survey area, with some areas having a mix of two different ESDs. The field verification indicated six ecological sites were present within the survey area, with two annual dominated states. One additional community was mapped that reflects agriculture and extensive surface disturbance. Community descriptions for the survey area are discussed below.

Agriculture/Disturbance

This mapping unit is not an ecological site, but rather describes areas that are disturbed by mining or agriculture. These areas are dominated by early successional species and are in various stages of succession depending on the degree of initial ground disturbance and when the disturbance occurred. Rubber rabbitbrush (*Ericameria nauseosa*) is usually the first shrub species to establish in these heavily disturbed areas. Understory species range from ruderal or early successional species to later successional species. Approximately 2.5% of the survey area (60.5 acres) is mapped as agriculture/disturbance.

Loamy Slope 8-10" P.Z. (R027XY007NV)

This community is dominated primarily by Wyoming big sagebrush in the shrub strata. At the lower elevations, other salt desert shrub species are also present within the overstory. Other shrub species found within this vegetation type include yellow rabbitbrush (*Chrysothamnus viscidiflorus*), rubber rabbitbrush, spiny hopsage (*Grayia spinosa*), Nevada jointfir (*Ephedra nevadensis*), mormon tea (*Ephedra viridis*), and winterfat (*Krascheninnikovia lanata*). A few scattered Utah juniper (*Juniperus osteosperma*) trees are also present within this type, but their cover is less than five percent. This community type is present from the lower to upper elevations within the survey area. The understory species present within this vegetation type include: Hood's phlox (*Phlox hoodii*), Sandberg bluegrass (*Poa secunda*), squirreltail (*Elymus elymoides*), Indian ricegrass (*Achnatherum hymenoides*), western needlegrass (*Achnatherum occidentale*), basin wildrye (*Leymus cinereus*), hawksbeard (*Crepis* sp.), and milkvetch (*Astragalus* sp.). Where this community has burned, the vegetation community is dominated by saltlover (Halogeton glomeratus), cheatgrass (Bromus tectorum), Russian thistle (Salsola tragus), herb sophia (*Descurainia sophia*), and clasping pepperweed (*Lepidium perfoliatum*). Approximately 26.7% of the survey area (635.2 acres) is mapped as Loamy Slope 8-10" P.Z. (and Loamy Slope 8-10" P.Z. Burned, and Loamy Slope 8-10" P.Z./Loamy 4-8" P.Z.)

Droughty Loam 8-10" P.Z. (R027XY008NV)

This community is similar in composition to the Loamy Slope 8-10" P.Z. described above, except that spiny hopsage is a bigger constituent in the shrub overstory. Approximately 6.3% of the survey area (150.3 acres) is mapped as Draughty Loam 8-10" P.Z.

Loamy 4-8" P.Z. (R027XY013NV)

Within the Project Area, this community is dominated by shadscale saltbush (*Atriplex confertifolia*) and bud sagebrush (*Picrothamnus desertorum*). Other shrub species present include spiny hopsage and Bailey's greasewood (*Sarcobatus baileyi*). This community occurs on ridges and rises throughout the Project area, from the higher elevations on the western side to the alkali soils at the eastern edge. This ecological site typically occurs on rocky shallow soils. In areas that were not burned, the understory supports a number of forb and grass species such as: buckwheat (*Eriogonum* sp.), Sandberg bluegrass, James' galleta (*Pleuraphis jamseii*), gooseberryleaf globemallow (*Sphaeralcea grossulariifolia*), cushion cryptantha (*Cryptantha circumcissa*), and Hood's phlox. Understory species within this ecological site vary with the level of disturbance. Some areas are burned, and although bud sagebrush and shadscale saltbush are present, the understory is mostly composed of ruderal species such as saltlover, cheatgrass, and clasping pepperweed. Approximately 44.4 % of the survey area (1,054.4 acres) is mapped as Loamy 4-8" P.Z, or Loamy 4-8" P.Z Burned.

Sodic Flat (R027XY025NV)

This community occurs at moderate to lower elevations, bordering the edge of the large playa to the east of the survey area. This community is located on alkali clay soils associated with the prehistoric Lake Lahontan lakebed. Species observed in this community type during field surveys include an overstory dominated by greasewood (*Sarcobatus vermiculatus*) and Torrey's saltbush (*Atriplex torreyi*). Common understory species include silverscale saltbush (*Atriplex argentea*), Mojave seablite (*Suaeda moquinii*), green molly (*Bassia americana*), saltlover, James' galleta, squirreltail, cheatgrass, and Indian ricegrass. Other shrub species found within this type include other salt desert shrub species and horsebrush (*Tetradymia* sp.). Grizzlybear pricklypear (*Opuntia polyacantha* var. *erinacea*) was also observed in this community. Approximately 7.5% of the survey area (179 acres) is mapped as Sodic Flat and Sodic Flat/Loamy Slope 8-10" P.Z.

Gravelly Fan 8-10" P.Z. (R027XY029NV)

Within the survey area, this community is limited to the margins of a deep drainage at the far southern edge. Basin big sagebrush is the dominant shrub, with rabbitbrush species representing less than 15 percent of the shrub cover. Understory species include Sandberg bluegrass, Indian ricegrass, and basin wildrye. Approximately 0.7% of the survey area (17.5 acres) is mapped as Gravelly Fan 8-10" P.Z.

Coarse Gravelly Loam 4-8" P.Z. (R027XY050NV)

This community is dominated by Bailey's greasewood, although other salt desert shrub species, such as spiny hopsage and Nevada jointfir, are common throughout. Within the survey area, saltlover is a prevalent understory species in this community. Approximately 11.6% of the survey area (275.7 acres) is mapped as Coarse Gravelly Loam 4-8" P.Z.

PIMO-JUOS WSG: 0R0502 (F027XY081NV)

This community has singleleaf pinyon (*Pinus monophylla*) and Utah Juniper in the overstory, having at least 10 percent cover. The understory is dominated by Wyoming big sagebrush with

various forbs and grasses. This vegetation type occurs on the far western side of the survey area, at the highest elevations, along the lower slopes of the Clan Alpine mountains. Approximately 0.1% of the survey area (1.3 acres) is mapped as PIMO-JUOS WSG: 0R0502.

3.4.2.2. Environmental Consequences

3.4.2.2.1. Proposed Action

Surface disturbance associated with the Project activities would result in the loss of vegetation. Temporary surface disturbance associated with the Proposed Action would be approximately 517 acres (if Option 1 is selected) or 530 acres (if Option 2 is selected). Nearly all of the surface disturbance, regardless of the Option selected, would occur in the Loamy 4-8" P.Z. vegetation community, and to a much lesser extent, the Loamy 8-10" P.Z. community. These vegetation communities are widespread throughout the Project Area and vicinity.

As part of the Project and Ormat's adopted protection measures (see Section 2.1.11), following Project construction most of this surface disturbance would undergo interim reclamation in accordance with the Project reclamation plan (see Section 2.1.9). Approximately 105.7 acres (if Option 1 is selected) or 105.8 acres (if Option 2 is selected) of proposed disturbance within the Project Area is permanent (see Table 5) and would remain disturbed during the life of the Project, undergoing final reclamation once the Project has been decommissioned.

Disturbed areas could have an increase in invasive, non-native species. To prevent the spread of invasive, non-native species, prior to construction, Ormat would submit to BLM an invasive plant management plan to monitor and control noxious weeds. Any infestations of noxious weed species discovered during construction or operation would be treated prior to disturbance. The location of the weeds would be communicated to the Stillwater Field Office weed coordinator, and treatment methods and herbicides used would be discussed prior to treatment. Additionally, Ormat has committed to require all contractors to power-wash their vehicles and equipment, including body and undercarriage, prior to entering BLM-administered lands.

The following mitigation measure is recommended to seed disturbed areas and minimize the spread of invasive, nonnative species.

Mitigation Measures:

Seeding of disturbed areas associated would be completed using the following BLM approved native seed mixture and would be comprised of the following species: fourwing saltbush (Atriplex canescens), squirreltail (Elymus elymoides), siberian wheatgrass (Agropyron fragile), desert needlegrass (Achnatherum speciosum) and small burnet (Sanguisorba minor). Nonnative seeds deemed appropriate by the BLM (based on site specific conditions and concerns) would also be considered.

Monitoring for revegetation and meeting the prescribed successful revegetation goals would ensure successful reclamation of all surface disturbances.

3.4.2.2.2. No Action Alternative

Under the No Action alternative, the Tungsten Mountain Geothermal Development Project as currently proposed would not be constructed or operated, and the affected environment for the

Proposed Action would remain the same. Geothermal exploration well drilling and testing activities, as approved under the Tungsten Mountain Geothermal Exploration EA (BLM 2012a), are ongoing and would be allowed to continue (see Section 1.3: Relationships to Statutes, Regulations, Plans and Environmental Analysis).

3.4.3. Soils

3.4.3.1. Affected Environment

Soil types in the Project Area were identified using the "Churchill County Area, Parts of Churchill and Lyon Counties" soil survey prepared by the U.S. Department of Agriculture Natural Resource Conservation Service (NRCS). Within the Project Area, there are 13 mapped soil associations: *Budihol-Minneha-Rock outcrop* (102), *Old Camp-Singatse-Rock outcrop* (302), *Settlement-Chuckles-Rustigate* (331), *Ricert-Trocken-Pineval* (353), *Chuckles-Playas complex* (400), *Trocken-Hessing-Pineval* (422), *Kram-Attella-Rock outcrop* (430), *Yody-Buffaran-Pineval* (480), *Yody-Ricert-Pineval* (481), *Rebel-Pineval-Yody* (590), *Rebel loam, 0 to 2 percent slopes* (591), *Mazuma-Bluewing* (643), and *Playas* (900) (see Figure 5). The Project Area does not contain mapped hydric soils.

MAP UNIT 102 – *Budihol-Minneha-Rock Outcrop Association.*

This map unit is comprised of 40% Budihol stony sandy loam, 30-50% slopes; 35% Minneha very stony loam, 30-50% slopes; 15% Rock Outcrop; and the remainder is minor components. This association is found on mountains and hillsides between 5,000 and 7,000 feet elevation. The mean annual precipitation (MAP) is 8 to 13 inches; mean annual air temperature (MAAT) is about 47 to 50 degrees F. Budihol soils consist of very shallow and shallow, well drained soils formed in residuum and colluvium derived from granitic rocks. Minneha soils consist of shallow, somewhat excessively drained soils that formed in residuum derived from granitic rocks (see also Table 5).

MAP UNIT 302 – *Old Camp-Singatse-Rock Outcrop Association*

This map unit is comprised of 50% Old Camp very stony loam, 30-50% slopes; 20% Singatse very gravely loam, 30-50% slopes; 15% Rock outcrop; and the remainder is minor components. This association is found on mountains between 5,000 and 7,000 feet elevation. The MAP is 5 to 10 inches; MAAT is 48 to 52 degrees F. Old Camp soils consist of shallow, well drained soils that formed in residuum and colluvium derived from volcanic rocks. Singatse soils consist of very shallow, somewhat excessively drained soils that formed in residuum and colluvium derived from volcanic rocks (see also Table 5).

MAP UNIT 331 – *Settlement-Chuckles-Rustigate Association*

This map unit is comprised of 40% Settlement silty clay loam, 0-2% slopes; 25% Chuckles loam, 0-2% slopes; 20% Rustigate silt loam, 0-2% slopes; and the remainder is minor components. This association is found on lake terraces between 5,000 and 5,200 feet elevation. The MAP is 4 to 7 inches; MAAT is 51 to 53 degrees F. Settlement soils consist of very deep, poorly drained soils that formed in alluvium derived from mixed rocks. Chuckles soils consist of very deep, moderately well drained soils that formed in alluvium derived from mixed rocks over lacustrine sediments. Rustigate soils consist of very deep, somewhat poorly drained soils that formed in alluvium derived from mixed rocks. A small portion of the gen tie line would occur within this soil association (see also Table 5).

MAP UNIT 353 – *Ricert-Trocken-Pineval Association*

This map unit is comprised of 45% Ricert gravely loam, 4-8% slopes; 30% Trocken gravelly, sandy loam, 4-8%; 10% Pineval gravelly loam, 4-8% slopes; and the remainder are minor components. This association is found on fan remnants and fan aprons between 5,200 and 6,000 feet elevation. The MAP is 5 to 9 inches; MAAT is 48 to 51 degrees F. Ricert soils consist of very deep, well drained soils that formed in alluvium derived from mixed rocks, loess, and volcanic ash. Trocken soils consist of very deep, well drained soils that formed from mixed rocks. Pineval soils consist of very deep, well drained soils that formed in alluvium derived from volcanic or mixed rocks. A majority of the gen-tie line would travel through this soil association (see also Table 5).

MAP UNIT 400 – *Chuckles-Playas Complex*

This map unit is comprised of 65% Chuckles loam, 0-2% slopes; 20% Playas silty clay loam, 0-1% slopes; and the remainder are minor components. This association is found on lake terraces and playas between 5,100 to 5,200 feet elevation. The MAP is 5 to 7 inches; the MAAT is 48 to 50 degrees F. Chuckles soils are discussed in detail above (see also Table 5).

MAP UNIT 422 – *Trocken-Hessing-Pineval Association*

This map unit is comprised of 50% Trocken gravelly very fine sandy loam, 2-4%; 20% Hessing silt loam 2-4%; 15% Pineval gravelly loam, 4-8% slopes; and the remainder are minor components. This association is found on fan skirts between 5,100 and 5,400 feet in elevation. The MAP is 6 to 10 inches; the MAAT is 48 to 51 degrees F. Trocken and Pineval soils are described above. Hessing soils consist of very deep, well drained soils that formed in alluvium derived from mixed rocks, loess and volcanic ash. The entirety of the geothermal operations (energy plants, substation, well field, pipelines and access roads), and a small portion of the gen-tie line, would occur in this soil association (see also Table 5).

MAP UNIT 430 – *Kram-Attella-Rock Outcrop Association*

This map unit is comprised of 45% Kram very gravelly very fine sandy loam, 15-50% slopes; 25% Attella very gravelly loam, 30-50% slopes; 20% Rock outcrop association; and the remainder are minor components. This association is found on mountains between 7,000 to 8,200 feet in elevation. The MAP is 10 to 12 inches; MAAT is about 43 to 48 degrees F. Kram soils consist of very shallow and shallow, somewhat excessively drained soils that formed in residuum derived from limestone and dolomite. Attella soils consist of very shallow, well drained soils that formed in residuum and colluvium derived from dolostone and calcareous shale with additions of loess and volcanic ash (see also Table 5).

MAP UNIT 480 – *Yody-Buffaran-Pineval Association*

This map unit is comprised of 50% Yody gravelly sandy loam, 4-8% slopes; 20% Buffaran gravelly loam, 4-8% slopes; 15% Pineval gravelly loam, 4-8% slopes; 8% Rebel loam, 4-8% slopes; and the remainder are minor components. This association is found on fan remnants between 5,000 to 6,500 feet in elevation. The MAP is 7 to 10 inches; MAAT is about 47 to 51 degrees F. Yody soils consist of moderately deep to a duripan, well drained soils that formed in alluvium derived from volcanic rocks. Buffaran soils consist of shallow to a duripan, well drained soils that formed in alluvium derived from mixed rocks. Pineval soils are described above. A small portion of the gen-tie line would occur within this soil association (see also Table 5).

MAP UNIT 481 – Yody-Ricert-Pineval Association

This map unit is comprised of 50% Yody gravelly sandy loam, 4-8% slopes; 20% Ricert gravelly sandy loam, 4-8% slopes; 15% Pineval gravelly loam, 4-8% slopes; and the remainder are minor components. This association is found on fan remnants between 5,300 and 5,800 feet elevation. The MAP is 7-10 inches; MAAT is about 48 to 50 degrees F. Yody, Ricert and Pineval soils are described above. A small portion of the gen-tie line would occur within this soil association (see also Table 5).

MAP UNIT 590 – *Rebel-Pineval-Yody Association*

This map unit is comprised of 50% Rebel loam, 4-8% slopes; 20% Pineval gravelly loam, 4-8% slopes; 15%

Yody gravelly sandy loam, 4-8% slopes; and the remainder are minor components. This association is found on inset fans between 5,500 and 6,500 feet elevation. The MAP is 7-10 inches; MAAT is about 48 to 51 degrees F. The Rebel soils consist of very deep, well drained soils that formed in alluvium derived from mixed rocks. Pineval and Yody soils are described above. Portions of the western spur of the gen-tie line (were the western option selected) would occur within this soil association (see also Table 5).

MAP UNIT 591 – *Rebel Loam, 0 to 2 Percent Slopes Association*

This map unit is comprised of 90% Rebel loam, 0-2% slopes; and the remainder are minor components. This association is found on inset fans between 5,500 and 6,500 feet elevation. The MAP is 7 to 9 inches; MAAT is 49 to 51 degrees F. Rebel soils are described above. Portions of the eastern spur of the gen-tie line (were the eastern option selected) would occur within this soil association (see also Table 5).

MAP UNIT 643 – *Mazuma-Bluewing Association*

This map unit is comprised of 45% Mazuma fine sandy loam, 0-2% slopes; 40% Bluewing very gravelly sandy loam, 2-8% slopes; and the remainder are minor components. This association is found on barrier beaches between 3,800 and 4,500 feet elevation. The MAP is 5 to 7 inches; MAAT is 50 to 52 degrees F. Mazuma soils consist of very deep, well drained soils that formed in alluvium and lacustrine deposits derived from mixed rocks. Bluewing soils consist of very deep, excessively drained soils that formed in alluvium derived from mixed rocks. Portions of the proposed gen-tie line would occur in this soil association (see also Table 5).

MAP UNIT 900 – *Playas Association*

This map unit is comprised of 95% Playa silty clay, 0-1% slopes; and the remainder are minor components. This association is found on playas between 3,850 and 4,250 feet in elevation (see also Table 5).

Table 5: Soil Map Unit Information

Soil Assn.	Amt. in Project Area	% of Project Area	Wind Erosion Hazard	Water Erosion Hazard	Fugitive Dust Resistance	Soil Compaction Resistance	Soil Restoration Potential
Budihol-Minneha-Rock Outcrop (102)	~210 ac.	~3.5%	moderately low	severe	moderate	moderate	low
Old Camp-Singatse-Rock Outcrop (302)	~5 ac.	<1%	low	severe	moderate	low	moderate

Soil Assn.	Amt. in Project Area	% of Project Area	Wind Erosion Hazard	Water Erosion Hazard	Fugitive Dust Resistance	Soil Compaction Resistance	Soil Restoration Potential
Settlement-Chuckles-Rustigate (331)*	~475 ac.	~7.9%	moderately high	slight	moderate	low	low
Ricert-Trocken-Pineval (353)*	~180 ac.	~3%	moderately low	slight	moderate	low	low
Chuckles-Playa Complex (400)	~135 ac.	~2.2%	moderately low	slight	low	low	low
Trocken-Hessing-Pineval (422)*	~1,825 ac.	~30.4%	moderately low	slight	moderate	moderate	low
Kram-Attella-Rock Outcrop (430)	~125 ac.	~2.1%	moderately low	moderate	low	low	moderate
Yody-Buffaran-Pineval (480)*	~90 ac.	~1.5%	moderately low	slight	moderate	low	moderate
Yody-Ricert-Pineval (481)*	~35 ac.	<1%	moderately low	slight	moderate	low	moderate
Rebel-Pineval-Yody (590)*	~7 ac.	<1%	moderately low	slight	low	moderate	low
Rebel Loam, 0-2 Percent Slopes (591)*	~25 ac.	<1%	moderately low	slight	low	moderate	low
Mazuma-Bluewing (643)*	~1,530 ac.	~25.4%	moderately high	slight	moderate	low	low
Playas (900)	~1,370 ac.	~22.8%	moderately high	not rated	moderate	low	not rated
* Designates soil associations on which there are surface disturbing activities proposed.							

(Source: NRCS 2015a and 2015b)

Soil Erosion

The soils within the Project Area have been rated by the NRCS for soil erosion susceptibility by wind (see Table 5). A wind erodibility group consists of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible.

The soils within the Project Area have also been rated by the NRCS for soil erosion susceptibility by water (see Table 5). The hazard is described as "slight," "moderate," "severe," or "very severe." A rating of "slight" indicates that erosion is unlikely under ordinary climatic conditions; "moderate" indicates that some erosion is likely and that erosion-control measures may be needed; "severe" indicates that erosion is very likely and that erosion-control measures, including revegetation of bare areas, are advised; and "very severe" indicates that significant erosion is expected, loss of soil productivity and off-site damage are likely, and erosion-control measures are costly and generally impractical.

Fugitive Dust Potential

The soils within the Project Area have been rated by the NRCS for their ability to resist the formation of fugitive dust emissions (see Table 5). This interpretation rates the vulnerability of a soil for eroded soil particles to go into suspension during a windstorm. "Low resistance" indicates the soil has features very favorable for the formation of dust; "moderate resistance" indicates

the soil has features favorable for the formation of dust; and "high resistance" indicates the soil has features unfavorable for dust formation.

Soil Compaction Resistance

The soils within the Project Area have been rated by the NRCS for resistance to soil compaction (see Table 5). Compaction tends to reduce water infiltration which affects plant production and composition, increases runoff which generally increased erosion rates, and affects organisms living within the soil. Compaction is predominantly influenced by moisture content; depth to saturation; percent of sand, silt, and clay; soil structure; organic matter content; and content of coarse fragments. "High resistance" indicates that the soil has features that are very favorable to resisting compaction. "Moderate resistance" indicates that the soil has features that are favorable to resisting compaction. "Low resistance" indicates that the soil has one or more features that favor the formation of a compacted layer.

Soil Restoration Potential

The soils within the Project Area have been rated by the NRCS for the soil restoration potential (see Table 5). This interpretation rates each soil for its inherent ability to recover from degradation, which is often referred to as soil resilience. The ability to recover from degradation means the ability to restore functional and structural integrity after a disturbance. Rating class terms indicate the extent to which the soils are made suitable by all of the soil features that affect the soil's ability to recover. "High potential" indicates that the soil has features that are very favorable for recovery, and good performance can be expected. "Moderate potential" indicates that the soil has features that are generally favorable for recovery, and fair performance can be expected. "Low potential" indicates that the soil has one or more features that are unfavorable for recovery, and poor performance can be expected.

3.4.3.2. Environmental Consequences

3.4.3.2.1. Proposed Action

Nine of the fourteen soil associations within the Project Area have surface disturbing activities proposed on it: associations 331, 353, 422, 480, 481, 580, 590, 591 and 643 (see Table 5). All of the disturbance within the Unit Area and portions of the gen-tie line would occur within association 422; the majority of the gen tie poles would be constructed within the remaining associations (primarily association 353).

Soil ratings within the Project Area suggest the susceptibility to sheet and rill erosion by water is slight, however the susceptibility of these soils to wind erosion is moderate and moderately favorable to dust formation. The soils with surface disturbance within the Project Area have soil features moderately favorable to resisting compaction; however these soils also rate low for their potential for soil recovery due to the low amounts of available precipitation received annually.

Implementation of the Project would result in the temporary disturbance of 517 acres of soils in the Project Area if Option 1 is selected, and 530 acres of temporary disturbance if Option 2 is selected. Permanent surface disturbance would be 105.7 acres if Option 1 is selected, and 105.8 acres if Option 2 is selected. Construction of the Project would require the removal of vegetation and topsoil material for clearance purposes, which would increase the potential for water and wind erosion through exposure to denuded surfaces. Additionally, soil would be compacted

during construction activities due to heavy vehicle travel and heavy equipment use, which would serve to increase surface runoff and erosion potential.

Based on implementation of adopted environmental protection measures specified by Ormat, water and/or aggregate would be applied on disturbed areas to control dust and stabilize erosive soils, which would reduce the impacts of the Proposed Action on soils in the Project Area. Disturbed areas that would not be used after construction would be revegetated with an approved seed mixture and planting procedures. Any topsoil enriched in organic material stockpiled on previously disturbed areas would be applied to enhance the opportunity for successful revegtetation.

The Project would be required to produce a Stormwater Pollution Prevention Plan (SWPPP). As required by NDEP, Ormat would design, install, and maintain erosion and sediment controls that minimize the discharge of pollutants from earth-disturbing activities. Ormat would minimize the amount of soil exposed during construction activities and control stormwater volume and velocity to minimize soil erosion. Specifically, buffers would be maintained; perimeter controls installed; sediment track-out would be minimized; disturbance on steep slopes would be minimized; and soil compaction would be minimized and topsoil preserved. To minimize erosion from storm water runoff, access roads would be maintained consistent with best management practices, as outlined in the Gold Book. Storm water would be intercepted and channeled to dissipate energy as necessary to minimize erosion around the power plant (USDI and USDA 2007).

3.4.3.2.2. No Action Alternative

Under the No Action alternative, the Tungsten Mountain Geothermal Development Project as currently proposed would not be constructed or operated, and the affected environment for the Proposed Action would remain the same. Geothermal exploration well drilling and testing activities, as approved under the Tungsten Mountain Geothermal Exploration EA (BLM 2012a), are ongoing and would be allowed to continue (see Section 1.3: Relationships to Statutes, Regulations, Plans and Environmental Analysis).

3.4.4. General Wildlife

3.4.4.1. Affected Environment

Habitat types within the Project area are described using Southwest Regional Gap Analysis Project (SWReGAP) landcover data. Within the survey area, 14 ecological systems were identified (see Table 6).

The Nevada Department of Wildlife (NDOW) has combined land cover analysis, wildlife distribution records and other ecological modeling techniques to develop a statewide Wildlife Action Plan (Wildlife Action Plan Team 2012). The Wildlife Action Plan characterizes Nevada's landscape into 22 key habitat types, and identifies species of concern and commonly associated species for each habitat type. Within the survey area, there are 7 key habitats (see Table 6).

Table 6: Ecological Systems and Key Habitat Types

Key Habitat	Ecological System
Intermountain (cold desert) scrub	Intermountain Basins Greasewood Flat
	Intermountain Basins Mixed Salt Desert Scrub
	Intermountain Basins Semi-desert Shrub Steppe
	Intermountain Basins Wash
Lower montane woodlands	Great Basin Pinon-Juniper Woodland
Desert playas & ephemeral pools	Intermountain Basins Playa
Sagebrush	Great Basin Xeric Mixed Sagebrush Shrubland
	Intermountain Basins Big Sagebrush Shrubland
	Intermountain Basins Montane Sagebrush Steppe
Cliffs and canyon	Intermountain Basins Cliff and Canyon
Barren landscapes	Barren Lands, non-specific
	Recently Burned
Invasive grasslands and forblands	Invasive Annual and Biennial Forbland
	Invasive Annual Grassland

Stantec Consulting Services Inc. observed 20 avian species, 19 mammalian species, and three reptilian species during biological baseline surveys conducted in the summer and fall of 2014 and spring of 2015 (the species are listed in Table 7 below) (Stantec 2014, Stantec 2015). Of these species, several (mostly bats) are BLM Statewide and Carson District Special Status Species. These species will be discussed in the Special Status Species section of this EA.

Table 7: Wildlife Species Observed Within the Project Area

Scientific Name	Common Name	Scientific Name	Common Name
Birds			
Alectoris chukar	Chukar	*Eremophila alpestris*	Horned lark
Amphispiza belli	Sagebrush sparrow	*Falco mexicanus*	Prairie falcon
Amphispiza bilineata	Black-throated sparrow	*Falco sparverius*	American kestrel
Aquila chrysaetos	**Golden eagle**	***Gymnorhinus cyanocephalus***	**Pinyon Jay**
Buteo jamaicensis	Red-tailed hawk	*Hirundo rustica*	Barn swallow
Cathartes aura	Turkey vulture	*Salpinctes obsoletus*	Rock wren
Charadrius vociferous	Killdeer	***Spizella breweri***	**Brewer's sparrow**
Chordeiles acutipennis	Lesser nighthawk	*Sturnella neglecta*	Western meadowlark
Corvus corax	Common raven	*Zenaida macroura*	Mourning dove
Dendroica petechial	American yellow warbler	***Athene cunicularia***	**Burrowing Owl**
Mammals			
Antilocapra Americana	Pronghorn antelope	**Myotis ciliolabrum**	**Western small-footed bat**
Antrozous pallidus	**Pallid bat**	**Myotis evotis**	**Long-eared myotis**
Canis latrans	Coyote	**Myotis lucifugus**	**Little brown bat**
Corynorhinus townsendii	**Townsend's big-eared bat**	Myotis thysanodes	Fringed myotis
Dipodomys ordii	Ord's kangaroo rat	Myotis volans	Long-legged myotis
Eptesicus fuscus	**Big brown bat**	**Myotis yumanensis**	**Yuma myotis**
Lasionycteris noctivagans	**Silver-haired bat**	**Parastrellus hesperus**	**Western pipistrelle**
Lasiurus cinereus	**Hoary bat**	*Sylvilagus nuttallii*	Mountain cottontail
Lepus californicus	Black-tailed jackrabbit	***Tadarida brasiliensis***	**Mexican free-tailed bat**
Myotis californicus	**California myotis**		
Reptile			
Crotalus sp.	Rattlesnake	*Gambelia wislizenii*	Long-nosed leopard lizard
Pituophis catenifer sayi	Bullsnake		
Note: BLM Statewide and Carson District Special Status Species are denoted in **bold** print. These species will be discussed in the Special Status Species section of this EA.			

Various species of raptors, which use diverse habitat types, may reside in the vicinity of the Project Area. American kestrel, bald eagle, barn owl, burrowing owl, Cooper's hawk, ferruginous hawk, great horned owl, long-eared owl, merlin, northern goshawk, northern harrier, northern sawwhet owl, osprey, peregrine falcon, rough-legged hawk, sharp-shinned hawk, short-eared owl, Swainson's hawk and western screech owl have distribution ranges that include the Project Area and four-mile buffer area (NDOW 2015). See also Section 3.4.8 (Special Status Species) and Section 3.4.7 (Migratory Birds).

Occupied bighorn sheep and mule deer distributions exist within portions of the Unit area, and within a 4-mile buffer area from both gen-tie lines. Pronghorn antelope distributions exist within the Unit area and both gen-tie lines. No known occupied elk distribution exist in the Project Area or vicinity (NDOW 2015).

3.4.4.2. Environmental Consequences

3.4.4.2.1. Proposed Action

The Project includes the temporary disturbance of 517 acres if Option 1 is selected and 530 acres if Option 2 is selected. Surface disturbance required for construction of the well pads, power plant sites, pipelines, gen tie line, substations, and access roads would result in the loss of wildlife habitat and direct displacement of wildlife. Further, wildlife utilizing the location would likely be displaced and forced to utilize the neighboring habitat, which would put additional pressure on the resources within the neighboring habitat. These impacts are expected to affect individuals (causing conflict or death) but should not impact local or regional wildlife populations on the whole.

Increased vehicular traffic, especially during construction, is expected. Vehicles could crush or collide with a variety of wildlife, especially less mobile species, such as rodents, small mammals, and lizards, resulting in increased wildlife mortality and injury. These impacts are expected to affect individuals and would not impact species at a local or regional population level. These impacts would be further minimized by the 20-25 mph Project Area speed limit agreed to by Ormat (see Section 2.1.11).

It is also expected that Project generated noise and human activity would deter some wildlife from using the area surrounding the Project. This noise and human activity would result in the disruption of normal behavioral patterns of some wildlife. This effect is expected to be greatest during construction when surface disturbance and when drilling is peaking in activity. This heightened effect is expected to be temporary, primarily lasting for the duration of construction or drilling. Wildlife may also avoid or tolerate habitat affected by the longer-term noise generated by the energy plants and wellheads. These effects may displace individuals or reduce breeding success of species sensitive to noise and human activity. These impacts are expected to affect individuals and would not impact local or regional wildlife populations.

Surface disturbing activities associated with the Project could result in an increase of invasive plant species and a subsequent decrease in native plant species and quality of habitat, especially as invasive species are present in the Project Area currently. In areas where vegetation would be completely cleared (i.e. well pads, access roads and power plant sites), native species may not re-establish, even with reclamation of the sites. Also, increased vehicular use of the area may contribute to the spread of invasive species if they are not properly washed. Ormat has adopted environmental protection measures to help minimize the spread of invasive species, including power washing vehicles and equipment prior to entering BLM-administered lands. Also, prior to

construction, Ormat would submit to BLM an invasive plant management plant to monitor and control noxious weeds (see Section 2.1.11)

Permanent structures associated with the Project (power plants, wells, pipelines, gen tie line and access roads) could impact wildlife utilizing the habitat around the Project features. Specifically, avian and bat species could be injured or killed as a result of electrocution and collisions Also, structures such as fencing and the gen tie line would provide additional perching opportunities for raptors and ravens, which could impact ground and shrub nesting birds and small mammals within the vicinity of the Project Area (see discussion in Migratory Birds Section 3.4.7, and Special Status Species Section 3.4.8).

Habitat fragmentation effects from Project development are expected to be greatest near the power plants, pipelines, and wells, as this is the area with the most concentrated surface disturbance. Some species, such as lizards and rodents, may be able to go under sections of the raised pipeline. Larger species, including big game species (such as bighorn sheep, mule deer and antelope), may be most impacted by fragmentation caused by Project development. These effects are expected to be minimal and affect individuals and local groups of animals using or migrating through the area. Species are expected to respond primarily by avoiding the area of development and fragmented habitat. As the Project footprint is small in relation to the amount of big game habitat affected, it is unlikely that there would be a significant impact to bighorn sheep, mule deer and antelope.

3.4.4.2.2. No Action Alternative

Under the No Action alternative, the Tungsten Mountain Geothermal Development Project as currently proposed would not be constructed or operated, and the affected environment for the Proposed Action would remain the same Geothermal exploration well drilling and testing activities, as approved under the Tungsten Mountain Geothermal Exploration EA (BLM 2012a), are ongoing and would be allowed to continue (see Section 1.3: Relationships to Statutes, Regulations, Plans and Environmental Analysis).

3.4.5. Migratory Birds

3.4.5.1. Affected Environment

On January 11, 2001, President Clinton signed Executive Order (EO) 13186 placing emphasis on the conservation and management of migratory birds. Migratory birds are protected under the Migratory Bird Treaty Act (MBTA) of 1918, and the EO addresses the responsibilities of federal agencies to protect them by taking actions to implement the MBTA. The BLM management for these species is based on IM 2008-050 dated December 18, 2007.

The NV Comprehensive Bird Conservation Plan (2010) and the USFWS Birds of Conservation Concern (2008) identify the avian species that have been classified as priority species by the USFWS and/or the state of Nevada. The priority species that are known to occur, or could potentially occur, within and out to 1 mile of the Project Area are identified in Table 8 below.

Table 8: Priority Avian Species Occurring, or Potentially Occurring, within and out to 2 miles from the Proposed Project Area

Species (Common Name)	Species (Scientific Name)	Habitat Status
Golden Eagle	Aquila chrysaetos	Documented occurrences in area. Primary food base are rabbits and hares, particularly black-tailed jackrabbit.
Swainson's Hawk	Buteo swainsoni	Unlikely to occur, with the exception during migration or dispersal. Potential in open habitats. Nesting habitat of tress is limited in the survey area. Has been identified in the vicinity of the Project Area (NDOW 2015).
Western burrowing owl	Athene cunicularia hypogaea	Suitable habitat is limited; however, potential habitat exists in open habitats. Known to reside in the vicinity of the Project Area (NDOW 2015). A burrowing owl mortality was found along the gen tie line during baseline surveys.
Ferruginous hawk	Buteo regalis	Suitable nesting and foraging habitat exists within the survey area.
Peregrine falcon	Falco peregrinus	Unlikely to occur, suitable nesting habitat does not occur as the survey area is dry, may occasionally be noted as a fly-over species. Known to reside in the vicinity of the Project area (NDOW 2015).
Pinyon Jay	Gymnorhinus cyanocephalus	Suitable nesting and foraging habitat is limited within the survey area.
Loggerhead shrike	Lanius ludocicianus	Potential nester in taller shrubs.
Sage Thrasher	Oreoscoptes montanus	Suitable habitat exists within and adjacent to the Project Area where sagebrush stands exist.
Brewer's sparrow	Spizella breweri	Suitable habitat exists within and adjacent to the Project Area where sagebrush stands exist.

Migratory bird surveys were conducted in June 2014 and April 2015 by Stantec Consulting Services Inc. (Stantec). The only priority avian species (see Table 8) observed during the 2014 and 2015 migratory bird surveys were the golden eagle and Brewer's sparrow. More detailed information about golden eagles and Brewer's sparrow is contained within the Special Status Species section of the EA (Section 3.4.8).

Additional bird species observed at 18 point counts during the 2014 migratory bird survey, and/or at 2 point counts during the 2015 survey include: American kestrel, barn swallow, black-throated sparrow, Brewer's blackbird, Eurasian collared-dove, horned lark, house finch, mourning dove, northern rough-winged swallow, killdeer, common raven, red-tailed hawk, rock wren, sagebrush sparrow, western meadow lark, yellow-headed blackbird, turkey vulture and an unknown species of swallow [Stantec biologists were unable to determine the species observed during a flyover on June 25; however field notes indicate that the birds were likely barn swallows (*Hirundo rustica*)]. Of these species, the horned lark and Brewer's blackbird were the most common species observed during the migratory bird point count surveys.

During the 2014 survey, which consisted of a 5 mile buffer around the Unit Area and a 2 mile buffer around the proposed gen-tie line, six occupied red-tailed hawk nests were documented. Three prairie falcon nests were also located, two of which were occupied. Nine unoccupied nests were not attributable to a species, but are potentially raptor nests. Some of these nests appeared to be under construction or nesting attempts and each had the appearance of little or no use. In addition, seven common raven nests were recorded within the survey area. See Table 9 below for a summary of occupied nests and location in relation to the proposed project boundaries. Lastly, a total of 23 golden eagle nest sites were identified, two of which were occupied. More detailed information about golden eagles is contained within the Special Status Species section of the EA (Section 3.4.8).

During the 2015 survey, which also consisted of a 5 mile buffer around the Unit Area and a 2 mile buffer around the proposed gen-tie line, eight red-tailed hawk nest sites, six occupied and two unoccupied, were observed. Three occupied nest sites were also occupied by red-tailed hawks during the 2014 survey. Two occupied nest sites were identified as unoccupied golden eagle nest sites during the 2014 survey. One red-tailed hawk nest site identified during the 2014 survey could not be located during the 2015 survey. See Table 9 below for a summary of occupied nests and location in relation to the proposed project boundaries.

Four prairie falcon nest sites were observed during the 2015 survey, 3 of which were occupied. Two nest sites were not identified during the 2014 survey (one was unoccupied and occurs adjacent to a golden eagle nest, and the other nest site was identified as a probable common raven nest during the 2014 survey); one nest site was occupied by prairie falcon during both the 2014 and 2015 surveys; and the other nest site could not be located during the 2015 survey. See Table 9 below for a summary of occupied nests and location in relation to the proposed project boundaries.

Sixteen unoccupied potential raptor nests were observed during the 2015 survey, which also consisted of a 5 mile buffer around the Unit Area and a 2 mile buffer around the proposed gen-tie line, four of which were also observed during the 2014 survey. In addition to raptor nests, eight common raven nest sites were observed during the 2015 survey. Seven nests were occupied and one was unoccupied. Two of the common raven nests were not identified during the 2014 survey. Two nest sites were identified as golden eagle nests (one occupied) during the 2014 survey. See Table 9 below for a summary of occupied nests and location in relation to the proposed project boundaries.

Table 9: Occupied Raptor and Common Raven Nest Sites Identified During the 2014 and 2015 Aerial Surveys

Species (2014)	Species (2015)	Occupancy Status (2014)	Occupancy Status (2015)	Distance from Unit Area (mi.)	Distance from Gen-Tie Line (mi.)
Red-tailed Hawk	Red-tailed Hawk	Occupied	Occupied	2.6	3.7
Red-tailed Hawk	--	Occupied	--	1.9	2.9
--	Common Raven	--	Occupied	2.3	3.3
Red-tailed Hawk	Red-tailed Hawk	Occupied	Occupied	4.7	5.6
Potential Raptor	Red-tailed Hawk	Unoccupied	Occupied	5.1	4.4
Potential Raptor	Common Raven	Unoccupied	Occupied	3.2	1.8
Common Raven	Prairie Falcon	Unoccupied	Occupied	3.6	2.6
Common Raven	Common Raven	Occupied	Unoccupied	4.6	3.9
Golden Eagle	Red-tailed Hawk	Unoccupied	Occupied	10.2	2.0
Red-tailed Hawk	Red-tailed Hawk	Occupied	Occupied	7.7	2.1
Golden Eagle	Red-tailed Hawk	Unoccupied	Occupied	4.8	1.9
Golden Eagle	Common Raven	Occupied	Occupied	3.9	1.2
--	Golden Eagle & Common Raven	--	Unoccupied & Occupied	0.8	2.0
Common Raven	Potential Raptor	Occupied	Unoccupied	4.7	2.2
Potential Raptor	Common Raven	Unoccupied	Occupied	3.8	1.6
Red-tailed Hawk	Red-tailed Hawk	Occupied	Unoccupied	5.0	7.7
Prairie Falcon	Prairie Falcon	Occupied	Occupied	13.2	0.8
Common Raven	Golden Eagle	Unoccupied	Occupied	1.8	2.7
Prairie Falcon	--	Unoccupied	Occupied	2.6	3.8
Red-tailed Hawk	Red-tailed Hawk	Occupied	Unoccupied	4.9	7.2
Common Raven	Common Raven	Unknown	Occupied	4.9	7.0
--	Common Raven	--	Occupied	5.0	6.9

Species (2014)	Species (2015)	Occupancy Status (2014)	Occupancy Status (2015)	Distance from Unit Area (mi.)	Distance from Gen-Tie Line (mi.)
Prairie Falcon	--	Occupied	--	1.0	1.7
--	Prairie Falcon	--	Occupied	0.1	0.9

Source: Stantec 2015b

Lastly, a total of 22 golden eagle nest sites were identified, five of which were occupied. More detailed information about golden eagles is contained within the Special Status Species section of the EA (Section 3.4.8).

3.4.5.2. Environmental Consequences

3.4.5.2.1. Proposed Action

Impacts to migratory birds include the reduction of foraging and potential nesting habitat due to Project construction and operations. These impacts are limited to the 517 acres of habitat if Option 1 is selected and 530 acres of habitat if Option 2 is selected, that would be disturbed due to Project construction and the associated habitat fragmentation. Impacts to habitat would be on-going until reclamation is completed.

The greatest impacts would occur during Project construction when increased noise and human activity may deter migratory birds from using the Project Area and its surrounding habitat. These impacts may displace migratory birds and/or reduce breeding success of some birds, especially those most sensitive to disturbance.

Vehicular traffic can pose a risk to avian species from vehicle collisions. Risk would be increased along the new and existing access roads, as well as along United States Highway 50, from traffic accessing the Project site. Additional risk may occur for scavenger species (e.g., turkey vulture, raven, raptors) foraging along roads for vehicle caused wildlife mortalities. As the construction phase of the Project is expected to employ 50 persons, risks of vehicle collisions would be increased during the eight month construction phase (as operation of the Project is expected have one to two onsite employees per shift, operational impacts from vehicular traffic are less than those anticipated during construction).

To minimize impacts to migratory bird species during construction, the following mitigation measure would be employed:

Mitigation Measure for migratory bird species:

All surface disturbing activities should occur outside of the migratory bird nesting period (March 1 to July 31 for raptors and April 1 to July 31 for all other avian species). If surface disturbing activities are to occur during this period, pre-construction avian surveys would be conducted in appropriate habitats by qualified biologists (approved by the BLM) prior to surface disturbing activities commencing. The exact area to be surveyed would be based on the scope of the surface disturbing activities (as determined by the BLM). If ground disturbing activities do not take place within 14 days, the areas would be resurveyed. If nesting migratory birds are present, appropriate buffers determined by the BLM, in coordination with the NDOW, would be applied until an approved biologist determines the young have fledged or the nest has failed.

Subsequent to construction, some surface disturbance can be reclaimed. Total permanent disturbance would be approximately 105 acres regardless of the Option selected; this habitat would be unavailable over the year life of the Project. Also, new man-made structures associated with the Proposed Action (e.g. fencing, lighting, well pads, power plants, substations and gen tie line) could impact migratory birds within and around the Project Area.

Specifically, fences around the energy plant and substations may be utilized for perching or roosting by many bird species. Fences can also create a collision flight hazard, and tend to pose the greatest risk for species that are heavy bodied and are not quick to take flight. Though fence strikes could impact some individuals, this would most likely have negligible impacts on local populations.

The use of facility lighting can attract insects, which in turn attracts foraging birds. This risk is associated with any and all facilities that have night time lighting. The lighting itself poses no direct risk to birds, but the increased activity in these areas near anthropogenic activity could pose some amount of risk to these species. Additionally, migrating birds may become attracted to or disoriented by artificial lights, particularly during inclement weather, which could pose collision risks with facility and gen tie line infrastructure. To reduce potential impacts to migratory birds, Ormat has committed to avoid nighttime construction to the extent practicable. Additional mitigation measures regarding facility lighting can be found in Section 3.4.13 (Visual Resources).

Substations may pose a risk of electrocution for birds by perching or nesting on infrastructure. Additionally, the substation would be surrounded by chain link fencing, which may be utilized for perching or roosting, increasing predation risks to prey species.

Bird species are susceptible to potential collisions with the gen tie lines; especially with shield wires and guy wires, but also with power poles. Avian species may be susceptible to collisions with gen tie lines due to an inability to see or distinguish the lines. If the gen tie lines are spotted during flight, heavy-bodied, less agile birds or birds within large flocks may lack the ability to quickly negotiate the lines, making these birds more susceptible to a potential collision. Adverse weather conditions obscuring sunlight and moonlight could also contribute to poor detection of the gen tie lines and guy wires.

Raptors that may hunt from perches on the power poles and aerial foraging birds (e.g., swifts and swallows) would be the bird species most susceptible to collision while foraging. The potential for collision with the power poles is also present when avian species are flying to or from a nesting or roosting site on the power pole. Some avian species may have an increased predation risk due to the improved perching locations of raptors and corvids on the gen tie line structures.

Avian electrocutions can occur when a bird simultaneously contacts energized and/or grounded structures, conductors, hardware, or equipment (APLIC 2006). Birds are susceptible to electrocution risks along gen tie and distribution lines, at transformers, and at substation facilities.

Nests on gen tie structures that pose the greatest risk to birds are those that are built in close proximity to energized conductors and hardware. While a nest that is not in close proximity to energized parts may not be an electrocution risk in and of itself, it would tend to cause the parent bird and possibly nest predator birds to routinely land on other parts of the power pole or surrounding poles that may be unsafe (APLIC 2006). In the Project Area, the species most likely to nest on power poles are ravens and raptors.

To reduce the potential of injury or mortality to migratory birds from the Proposed Action, and to ensure adequate monitoring is in place to determine if mortalities are occurring, a Bird and Bat Conservation Strategy (BBCS) was developed with the goal of reducing the potential impacts of avian mortality resulting from construction and operation of the Project. Further, Ormat has agreed to adopt gen-tie line raptor protection practices which would minimize bird electrocutions and reduce bird mortality. Additionally, all power poles would utilize BLM-approved raptor deterrents, and within areas mapped as greater sage-grouse OHMA, anti-perching and anti-nesting devices would be installed on the gen tie line components (see Section 2.1.11).

3.4.5.2.2. No Action Alternative

Under the No Action alternative, the Tungsten Mountain Geothermal Development Project as currently proposed would not be constructed or operated, and the affected environment for the Proposed Action would remain the same. Geothermal exploration well drilling and testing activities, as approved under the Tungsten Mountain Geothermal Exploration EA (BLM 2012a), are ongoing and would be allowed to continue (see Section 1.3: Relationships to Statutes, Regulations, Plans and Environmental Analysis).

3.4.6. Special Status Species

3.4.6.1. Affected Environment

Some species of plants and wildlife are accorded special status by Federal and state agencies largely because they are either scarce on a regional level, facing clearly defined threats, or in a position within the regional landscape to potentially become scarce. Special status species include:

- Threatened, endangered, proposed, or candidates for Federal listing under the Endangered Species Act of 1973 or equivalent state laws;
- BLM-sensitive species designated by the BLM Nevada State Director;
- Protected under Title 47, Chapter 527 (Protection and Preservation of Timbered Lands, Trees and Flora) of the Nevada State Code;
- At-risk taxa tracked by the Nevada National Heritage Program within the Department of Conservation and Natural Resources; and/or
- Designated as sensitive by the Nevada Native Plant Society.

The State of Nevada can fully protect wildlife species through the stipulations of Nevada Revised Statute (NRS) 501. Furthermore, the State of Nevada protects "critically endangered" plant species, as well as cacti, under NRS 527.

There are no Federally listed as endangered or threatened, or proposed for listing species under the Endangered Species Act known to occur within the Project Area and its associated area of influence; therefore, the Project would have no effect on endangered, threatened or proposed species. The Greater sage-grouse was a candidate for listing. However, on September 21, 2015, the Record of Decision (ROD) and Approved Resource Management Plan Amendments for the Great Basin Region, including the Greater Sage-Grouse Sub-Regions of: Idaho and Southwestern Montana, Nevada and Northeastern California, Oregon, and Utah (USDI, BLM 2015a) were

signed on September 21, 2015 by the Director of the BLM and the Assistant Secretary of Land and Minerals Management. A determination was made by the U.S. Fish and Wildlife Service that the Greater sage-grouse does not warrant protection under the Endangered Species Act. However, as the BLM considers the Greater sage-grouse a special status species, it is discussed further below.

Table 10: Special Status Species Occurring, or Potentially Occurring, within and out to 2 miles from the Proposed Project Area

Species (Common Name)	Species (Scientific Name)	Habitat Status
PLANTS		
Windloving buckwheat	Eriogonum anemophilum	Found on generally high elevation dry, exposed, relatively barren ridges and knolls on shallow soils over bedrock from 4,750 to 9,840 feet in elevation. Barren clay habitat does not exist in the Project Area and no windloving buckwheat were observed during either the 2014 or 2015 biological surveys.
Beatley buckwheat	Eriogonum beatleyae	Occurs on whitish clay hills. There is a little of his habitat at the north end of the Project Area. No Beatley buckwheat were observed during either the 2014 or 2015 biological surveys.
Sand cholla	Grusonia pulchella	Found on sandy to rocky flats, often in sandy areas from 3,800 to 5,000 feet in elevation throughout most of Nevada. It may occur on the outwash fans from the Clan Alpine Range. Sand cholla was not observed during either the 2014 or 2015 biological surveys.
Lahontan beardtongue	Penstemon palmeri var. macranthus	Found along washes, roadsides and canyon floors from 3,430 to 5,500 feet in elevation and is associated with carbonate soils and some subsurface moisture. Stantec observed five occurrences of Lahontan beardtongue within the Unit Area during the 2014 biological survey.
Grizzlybear pricklypear	Opuntia erinacea	The grizzlybear prickly pear is not a BLM Nevada sensitive species, however all cacti are protected in Nevada under NRS 527.060-120. The grizzlybear pricklypear is found in sandy or gravelly soils of valleys, plains, low hills, or canyonsides in the desert or woodland, prairie. This species was observed during the baseline biological surveys.
BIRDS		
Golden Eagle	Aquila chrysaetos	General habitat requirements are described in the Migratory Birds section (EA Section 3.4.8). Detailed information about the golden eagle use within a 5-mile buffer around the Unit Area and a 2-mile buffer around the proposed gen-tie line is provided below.
Swainson's Hawk	Buteo swainsoni	General habitat requirements are described in the Migratory Birds section (EA Section 3.4.8). No Swainson's hawks were observed during either the 2014 or 2015 biological surveys.
Western burrowing owl	Athene cunicularia hypogaea	General habitat requirements are described in the Migratory Birds section (EA Section 3.4.8). Burrowing owl surveys were conducted in June and July 2014. No burrowing owls were observed or heard during the calling/listening surveys. One burrowing owl mortality and one unoccupied burrow were observed along the access road that parallels the proposed gen-tie line.
Ferruginous hawk	Buteo regalis	General habitat requirements are described in the Migratory Birds section (EA Section 3.4.8). No ferruginous hawks were observed during either the 2014 or 2015 biological surveys.
Peregrine falcon	Falco peregrinus	General habitat requirements are described in the Migratory Birds section (EA Section 3.4.8). No peregrine falcons were observed during either the 2014 or 2015 biological surveys.

Species (Common Name)	Species (Scientific Name)	Habitat Status
Pinyon Jay	Gymnorhinus cyanocephalus	General habitat requirements are described in the Migratory Birds section (EA Section 3.4.8). At least one pinyon jay was observed within the Project Area during the biological surveys.
Loggerhead shrike	Lanius ludocicianus	General habitat requirements are described in the Migratory Birds section (EA Section 3.4.8). No loggerhead shrikes were observed during either the 2014 or 2015 biological surveys.
Sage Thrasher	Oreoscoptes montanus	General habitat requirements are described in the Migratory Birds section (EA Section 3.4.8). No sage thrashers were observed during either the 2014 or 2015 biological surveys.
Brewer's sparrow	Spizella breweri	General habitat requirements are described in the Migratory Birds section (EA Section 3.4.8). A single observation of Brewer's sparrow was made during the 2014 survey.
MAMMALS		
Pallid bat	Antrozous pallidus	Pallid bats are found throughout NV in low to mid elevations in habitats that include pinyon-juniper, blackbrush, creosote, sagebrush and salt desert scrub. Foraging occurs both in vegetation and on the ground surface. Detailed information about all bat species is provided below.
Townsend's big-eared bat	Corynorhinus townsendii	Townsend's big-eared bats are found in a variety of habitats, such as pinyon-juniper, sagebrush and salt desert scrub. The bat primarily forages on moths in open forest habitats of pinyon-juniper, mahogany, aspen and cottonwood, and would travel long distances to reach suitable foraging areas. Detailed information about all bat species is provided below.
Big brown bat	Eptesicus fuscus	Big brown bats occur in a variety of habitats that include aspen stands, pinyon-juniper woodlands, lowland/upland riparian areas, sagebrush communities, grasslands, desert scrub communities and agricultural fields. They roost in hollow trees, mine crevices, caves, tunnels and buildings. They forage over open land and water and consume a variety of insects. Detailed information about all bat species is provided below.
Spotted bat	Euderma maculatum	The spotted bat occurs in varied habitats, including desert-scrub, pinyon-juniper woodland, mixed conifer forest, canyon bottoms, riparian areas, fields and open pastures. Spotted bats roost in cracks, crevices and caves high in rock cliffs. Their primary diet consists of moths. Detailed information about all bat species is provided below.
California myotis	Myotis californicus	The California myotis inhabits riparian woodlands, canyons, grasslands, and desert habitats and utilizes rock crevices, caves, buildings and abandoned mine workings for roosting, maternity and hibernation. These bats forage on insects along margins of tree canopy and over water. Detailed information about all bat species is provided below.
Western small-footed myotis	Myotis ciliolabrum	The western small-footed myotis is associated with desert scrub, grassland, sagebrush steppe, pinyon-juniper woodland and agricultural areas. Caves, mines and trees are used as roosting sites. The species forages in open areas, and consume small moths, leafhoppers, mosquitoes and flying ants. Detailed information about all bat species is provided below.
Long-eared myotis	Myotis evotis	The long-eared myotis inhabits forested habitats and primarily roosts beneath the bark or within cavities of old trees. The species will occasionally roost in the crevices of cliffs and buildings. This is one of the most wide ranging bat species in North America, occurring from Alaska to Mexico. Detailed information about all bat species is provided below.

Species (Common Name)	Species (Scientific Name)	Habitat Status
Little brown myotis	Myotis lucifugus	The little brown myotis is a wide-ranging bat, typically found in mesic or forested habitats. Detailed information about all bat species is provided below.
Fringed myotis	Myotis thysanades	The fringed myotis favors oak and pinyon-juniper habitats. Detailed information about all bat species is provided below.
Long-legged myotis	Myotis volans	The long-legged myotis is most common in forested habitats though does occur in more arid habitats. Detailed information about all bat species is provided below.
Yuma myotis	Myotis yumanensis	The Yuma myotis inhabits riparian areas, scrublands, deserts, and forests and is commonly found roosting in bridges, buildings, cliff crevices, caves, mines, and trees. Its primary diet is emergent aquatic insects such as caddis flies, midges, and small moths and beetles. Detailed information about all bat species is provided below.
Brazilian free-tailed bat	Tadarida brasiliensis	Brazilian free-tailed bats utilize a wide range of habitats which include caves, cliffs, bridges, and tree hallows. The species generally occurs in large colonies Lactating females are voracious feeders, generally feeding on moths. Considered migratory in northern Nevada. Detailed information about all bat species is provided below.
Western pipistrelle	Pipistrellus Hesperus	The western pipistrelle is the smallest of all North American bats and is usually associated with rocky canyons and outcrops where they are known to roost in small crevices. It is also known to occupy mines and caves. Its food sources include ants, mosquitoes, fruit flies, and leafhoppers. Detailed information about all bat species is provided below.
Pygmy rabbit	Brachylagus idahoensis	The pygmy rabbit occurs throughout much of the Great Basin in areas of tall, dense sagebrush (Artemisia spp.) or mixed sagebrush habitats. Pygmy rabbit burrows are typically found in relatively deep, loose soils of wind- or water-born origin suitable for burrowing. No pygmy rabbits, burrows, scat or tracks were observed during the 2014 survey.
Dark kangaroo mouse	Microdipodops megacephalus	The dark kangaroo mouse inhabits stabilized sand dunes and other sandy soils in valley bottoms and alluvial fans dominated by big sagebrush (Artemisia tridentata), rabbitbrush (Chrysothamnus spp.), and horsebrush (Tetradymia spp.). Species also occurs on fine gravelly soils or sandy soils with varying amounts of gravel. The dark kangaroo mouse was not observed during either the 2014 or 2015 biological surveys, though no specific surveys for this species were conducted.
INSECTS		
Early blue	Euphilotes enoptes primavera	The early blue is a subspecies of Pacific dotted blue butterfly. Larvae feed primarily on naked buckwheat (*Eriogonum nudum*) and other buckwheat (*Eriogonum ssp.*). Although host plants (*Eriogonum sp.*) have the potential to occur within the Project Area, the early blue is unlikely to occur in the locale.

Species (Common Name)	Species (Scientific Name)	Habitat Status
Sand Mountain blue	Euphilotes phallecscens arenamontana	The sand mountain blue is a subspecies of Pallid blue butterfly. Larvae feed on buckwheat plants. Although host plants (*Eriogonum sp.*) have the potential to occur in within the Project Area, the Sand Mountain blue is unlikely to occur in the locale
Great Basin small blue	Philotiella speclosa septentrionalis	The Great Basin small blue is subspecies of the small blue (*Philotiella speciosa*). Habitat for the small blue is desert flats and dry washes. Adults are sedentary and stay close to their larval food plant. The Great Basin small blue is unlikely to occur. The range of subspecies is still unknown but is likely restricted due to lack of mobility of adults. However, host plants (*Eriogonum sp.*) have the potential to occur within the Project Area.

(Source: Stantec 2015a)

Greater sage-grouse

Approximately 1,185 acres of greater sage-grouse habitat was surveyed in July, September and October 2014 in accordance with the BLM Statewide Wildlife Survey Protocols. The survey area included a 5-mile buffer around the Unit Area and a 2-mile buffer of the proposed gen-tie line. The mapping process for the sage-grouse EIS classified portions of the Project Area (power plants, most of the well pads, and the majority of the transmission line) as sage-grouse Other Habitat Management Area (OHMA (see Figure 6). During the 2014 survey no greater sage grouse, droppings, feathers or tracks were observed.

Golden eagles

A total of 23 golden eagle nest sites were identified during the June 2014 survey, two of which were occupied. One occupied nest was located approximately 2.0 miles north of the Unit Area (and 3.2 miles north of the gen tie line) on an outcrop in Inter-Mountain Basins big sagebrush shrubland; the other occupied nest was located approximately 1.2 miles west of the gen tie line (and 3.9 miles south of the Unit Area) on an outcrop in Great Basin xeric mixed sagebrush shrubland (Stantec 2015b).

A total of 22 golden eagle nest sites were identified during the April 2015 survey (which included a 5 mile buffer around the Unit Area and a 2 mile buffer of the proposed gen-tie line), five of which were occupied. None of the occupied nest sites in 2015 were the same nest sites that were occupied during the 2014 survey. One occupied nest was located approximately 1.8 miles southwest of the Unit Area (and 2.7 miles northwest of the gen tie line) on a cliff face in Great Basin pinyon-juniper woodland; one occupied nest was located approximately 4.0 miles north of the Unit Area (and 5.6 miles north of the gen tie line) on a cliff face in Great Basin pinyon-juniper woodland; one occupied nest was located approximately 1.6 miles south of the gen tie line terminus (and 14.1 miles south of the Unit Area) on an outcrop in Great Basin pinyon-juniper woodland; one occupied nest was located approximately 0.9 miles west of the gen tie line (and 9.8 miles southwest of the Unit Area) on an outcrop in Great Basin xeric mixed sagebrush shrubland; and one occupied nest was located approximately 2.5 miles west of the gen tie line (and 3.3 miles southwest of the Unit Area) on a rock fin in Great Basin pinyon-juniper woodland (Stantec 2015b).

There is one golden eagle nest located within the northwest corner of the Unit Area. The closest golden eagle nest to the gen tie line is approximately 0.8 miles west located on an outcrop in

Great Basin xeric mixed sagebrush shrubland. Both nests were unoccupied in the 2014 and 2015 surveys.

Potential nesting habitat for golden eagles includes cliffs and rocky outcrops, which occur within 5 miles of the Unit Area and 2 miles of the proposed gen-tie line. Potential nesting habitat also includes trees and gen tie line poles. Nest site density within 5 miles of the Unit Area and 2 miles of the proposed gen-tie line was 1.25 occupied and unoccupied nest sites per 10 square miles in 2014 and 1.19 occupied and unoccupied nests sites per 10 square miles in 2015. However, potential for bias in density calculations exists due to the heterogeneous landscape in the survey area and the extent of suitable nesting habitat. The entire Project Area is considered suitable golden eagle foraging habitat. No eagles were observed foraging within the Project Area during baseline surveys conducted in 2014 and 2015 (Stantec 2015b).

Bats

The Project Area and vicinity include old mine shafts and adits which are potential roosting and hibernacula sites, as well as a meadow with surface water and suitable pinyon-juniper habitat. There are 6 adits, 1 decline and 1 shaft that provide suitable bat habitat within and out to 1 mile from the Unit Area.

Bat use was sampled at four locations within and adjacent to the Project Area (portal, ridge, shaft and Clan Alpine Ranch meadow) during June, July, September and October 2014. The bat survey resulted in a total of 14 species identified between the four locations and sample dates: pallid bat (*Antrozous pallidus*), Townsend's big-eared bat (*Corynorhinus townsendii*), big brown bat (*Eptesicus fuscus*), silver haired bat (*Lasionycteris noctivagans*), hoary bat (*Lasiurus cinereus*), California myotis (*Myotis californicus*), Western small-footed myotis (*Myotis ciliolabrum*), long-eared myotis (*Myotis evotis*), little brown bat (*Myotis lucifugus*), fringed myotis (*Myotis thysanodes*), long-legged myotis (*Myotis volans*), Yuma myotis (*Myotis yumanenis*), western pipistrelle (*Parastrellus hesperus*) and Brazilian free-tailed bat (*Tadarida brasiliensis*). Overall, bat use within and around the Project Area was high. The long-legged myotis and pallid bat were the most abundantly recorded species, followed by the little brown bat, the western pipistrelle, and the big brown bat. The least abundantly recorded species was the fringed myotis, which was only recorded at the Portal location during the summer sampling (Stantec 2015a).

3.4.6.2. Environmental Consequences

3.4.6.2.1. Proposed Action

General impacts to the key habitats (see Table 6) and these wildlife species (see Table 7) are described in Section 3.4.6 (General Wildlife) and Section 3.4.7 (Migratory Birds). More specific impacts to individual special status species not already addressed are described below.

Plants

Clearing and disturbing approximately 517 acres (if Option 1 is selected) or 530 acres (if Option 2 is selected) would result in the loss and fragmentation of habitat available to the special status plant species identified in Table 10. Suitable habitat for the Windloving buckwheat, Beatley buckwheat and sand cholla is minimally available in the Project Area, and no species were observed; the Lahontan beardtongue and grizzlybear pricklypear was observed during the 2014

and 2015 biological surveys. The following mitigation measure would reduce the likelihood of plant mortality.

Mitigation Measure for special status species:

Appropriate buffers would be placed around BLM sensitive plants (e.g. Lahontan beardtongue) and cacti (e.g. grizzlybear prickly pear) where reasonably possible to protect them from surface disturbing activities. In areas where avoidance is not reasonably possible, all BLM sensitive plant species and cacti must be replanted immediately in undisturbed locations containing suitable habitat that is adjacent to the project area. Unless otherwise directed by the BLM botanist, all replanted plants must be watered and otherwise maintained for a period of one year. The goal is to have at least 80% survival of all transplanted plants.

Avoidance of direct impacts to specific special status plant species or plant colonies through the use of buffers would assist continued propagation of these species and should effectively prevent loss of individual plants or plant colonies.

Birds

Potential impacts to bird species (see Table 10, and also greater sage-grouse) include the loss of foraging habitat, injury or mortality from collisions with structures, displacement by noise from vehicles and equipment, and nest destruction (see impact discussion in Section 3.4.6, General Wildlife and Section 3.4.7, Migratory Birds).

Given the limited surface disturbance and area of habitat fragmentation, impacts to foraging habitat would be minimal and concentrated around the power plants, production and injection pipelines, and wells. Additional impacts from the transmission corridor construction would also be minimal because the majority of the corridor is proposed to be built along an existing road.

Further effects of the transmission line to bird species would be minimized by Ormat's agreement to employ environmental protection measures as described by the APLIC (2006) and APLIC (2012). Because the habitat surrounding the Project Area is relatively undisturbed, bird species would be expected to shift their foraging efforts away from the Project development to the more undisturbed habitat. These impacts are expected to affect individuals of the local population, but no effect to the regional population is expected.

Portions of the Project Area (power plants, most of the well pads, and the majority of the transmission line) are mapped as greater sage-grouse Other Habitat Management Area (OHMA). Appendix C of the Nevada and Northeastern California Greater sage-grouse Approved Resource Management Plan Amendments (BLM 2015b) includes "Required Design Features" (RDFs) which are required for certain activities in all Greater sage-grouse habitat, including areas mapped as OHMA (see Appendix C). RDFs establish specifications to help mitigate adverse impacts to the greater sage-grouse. Ormat would comply with the applicable RDFs. Additionally, all power poles would utilize BLM-approved raptor deterrents, and within areas mapped as greater sage-grouse OHMA, anti-perching and anti- nesting devices would be installed on the gen tie line components (see Section 2.1.11). Adherence to the RDFs and adopted protection measures, in addition to mitigation identified in EA Section 3.4.7 (Migratory Birds) requiring pre-construction surveys, potential impacts to greater sage-grouse would be further reduced.

No occupied nests were observed within the Project Area and no impacts to golden eagle and raptor nests are anticipated. A mitigation measure identified in the Migratory Bird section of this EA (see Section 3.4.7) requiring pre-disturbance surveys would further reduce the likelihood of negative impacts to nesting raptors in the event an occupied nest was to occur within the Project Area or its area of influence.

Mammals

Bats

Potential impacts to the bat species (see Table 10) include effects to the adits, shaft and decline; the loss of foraging habitat, particularly riparian vegetation; injury or mortality from collisions with structures; displacement by noise from vehicles and equipment; and alteration of behavior from night lighting (see impact discussion in Section 3.4.6, General Wildlife and Section 3.4.7, Migratory Birds).

Direct impacts to the adits, shaft and decline in the Project Area and vicinity are not anticipated as these sites are avoided and no activities are proposed at these sites. However, the surveyed sites in Section 21, T. 21 N., R. 38 E. (see Table 10) have a high hazard rating due to human activity and the extent of workings. The following mitigation measure is recommended which would reduce the potential for any impacts to either bats which use the adits or to human safety.

Mitigation Measures

ORMAT will provide the funding necessary to install bat friendly gates over the entrances of all adits/shafts within the Unit Area that are used by bats for roosting. This will prevent humans from disturbing roosting bats. The construction of bat gates will occur during the spring and/or fall (dependent on bat usage of each structure).

Foraging habitat for bats is available throughout the Project Area and vicinity, particularly the Clan Alpine Ranch meadow area south of the geothermal operations and other sources of riparian vegetation and suitable pinyon-juniper habitat in the Project vicinity. As there are no surface disturbing activities proposed within either riparian areas or pinyon-juniper habitat, impacts would affect only individual bats and would not impact the local or regional bat population. Additionally, adverse impacts to the springs and seeps in the Project vicinity is unlikely, therefore indirect impacts to the associated riparian vegetation are not anticipated.

Noise and activities associated with the project (particularly during construction and drilling operations) could impact bats roosting in the adits/shafts within and adjacent to the Project Area. Disturbance to roosting bats could be especially damaging to local populations if the adits/shafts function as hibernation and/or maternity locations and impacts were to occur during these critical periods. Mitigation measures are identified below to protect roosting bats during the hibernation and maternity periods, and should reduce potential impacts to bats.

Mitigation Measures

To reduce impacts to roosting bats during the critical hibernation and/or maternity periods, no construction activities or drilling operations will occur within 0.25 miles of structures used by bats during these critical periods. The hibernation period is generally from October 30 to March 30, and the maternity period is generally from May 15 to July 30. It must be stated that these dates will vary by species and are influenced by annual climatic conditions.

If hydrologic monitoring indicates that project related activities are resulting in the desiccation of important bat foraging/drinking areas within and immediately adjacent to the Project Area, ORMAT will maintain an artificial water source within the Unit Area that will provide water and foraging opportunities for bats. The artificial water source could also be used to deter bats from drinking/foraging around reserve pits (if reserve pits contain liquids that are harmful to bats).

Lights used for drilling at night and power plant operations may attract and concentrate moths and other insects on which the bats may feed, which could be a beneficial effect, though could also alter bat behavior. A mitigation measure which would reduce the impacts to bats from project lighting is provided below. Additional mitigation for visual impacts associated with lighting are also included in Section 3.4.13 Visual Resources.

Mitigation Measure

To reduce impacts to bats from project lighting, motion activated lighting, directed lighting, shielding methods, and or/reduced lumen intensity will be used.

Pygmy rabbit

No impacts to pygmy rabbits are expected as pygmy rabbit habitat is marginal and no pygmy rabbits or their sign were observed during the biological surveys.

The additional traffic resulting from the construction crew traffic would increase the amount of dust in the area and would increase the probability of running over a pygmy rabbit (should one be present). However, Ormat has agreed to limit vehicle speeds to 20-25 mph through the area, and has also proposed to apply water to the ground during the construction and utilization of the drill pads and access roads as necessary to control dust (see Section 2.1.11). Therefore, the proposed Project may impact individuals, but would not likely contribute to a trend towards Federal listing or cause a loss of viability to the population or species.

Dark kangaroo mouse

Surface disturbance associated with construction activities would result in the loss of dark kangaroo mouse habitat. Given the limited surface disturbance, habitat impacts would be minimal and concentrated around the power plants, production and injection pipelines, and wells. Additional impacts from the transmission corridor construction would also be minimal because the majority of the corridor is proposed to be built along an existing road. Similar habitat is abundant in the Project vicinity. Potential impacts are expected to affect individuals, but would not likely cause a loss of viability to the population or species.

The use of artificial night lighting sources (primarily during drilling and construction, and to a lesser extent, during Project operations) could impact the dark kangaroo mouse (should they occur in the area). During increased illumination at night, nocturnal rodents (such as the dark kangaroo mouse) have been observed to decrease activity (Kramer and Birney 2001; Wolfe and Summerlin 1989; Clarke 1983) and alter foraging behavior (Vasquez 1994). Also, during increased nocturnal illumination, owl hunting effectiveness on nocturnal rodents can increase (Clarke 1983). Mitigation measures which would reduce the impacts of night lighting are provided in Section 3.4.13 Visual Resources.

Insects

Several buckwheat species were observed during the survey within the Project Area: two species of perennial buckwheat [cushion buckwheat (*Eriogonum ovalifolium*) and Heermann's buckwheat (*Eriogonum heermannii*)] and three species of annual buckwheat [Palmer's buckwheat (*Eriogonum palmeranium*), Spotted buckwheat (Eriogonum maculatum) and nodding buckwheat (*Eriogonum cernuum*)]. These species are not considered sensitive, but are known host plants for sensitive butterflies and skippers. However, no butterflies fitting the description of those identified in Table 10 were observed utilizing any buckwheat species within the Project Area, nor were any caterpillars observed on buckwheat plants. As no surface disturbing activities are proposed in areas containing buckwheat species, no impacts are anticipated.

3.4.6.2.2. No Action Alternative

Under the No Action alternative, the Tungsten Mountain Geothermal Development Project as currently proposed would not be constructed or operated, and the affected environment for the Proposed Action would remain the same. Geothermal exploration well drilling and testing activities, as approved under the Tungsten Mountain Geothermal Exploration EA (BLM 2012a), are ongoing and would be allowed to continue (see Section 1.3: Relationships to Statutes, Regulations, Plans and Environmental Analysis).

3.4.7. Livestock Grazing

3.4.7.1. Affected Environment

BLM manages rangelands on public lands under 43 CFR 4100 and BLM Handbooks 4100 to 4180 (BLM 1984; BLM 2011).

The Project Area is within the Clan Alpine Allotment (which also includes the Bell Flat Pasture). This allotment includes 365,229 acres with 10,210 animal unit months (AUM) permitted. See Table 11 for grazing schedule information.

Table 11: Current Grazing Schedule

Use Area (Pasture)	Season of Use	Species	AUMs1
Shoshone2	05/01-06/30	927 cattle	1,859 AUMs
Alpine2	05/01-06/30	927 cattle	1,859 AUMs
Desatoya/Cherry Valley	07/01-08/31	927 cattle	1,890 AUMs
Edwards	09/01-10/31	927 cattle	1,859 AUMs
Cold Springs	11/01-11/30	927 cattle	914 AUMs
Bell Flat	12/01-03/31	927 cattle	3,688 AUMs
1 An AUM is the amount of forage needed to sustain one cow, five sheep, or five goats for a month. 2 Use is rotated annually.			

3.4.7.2. Environmental Consequences

3.4.7.2.1. Proposed Action

Long term surface disturbance associated with the Project would be 105.7 acres if Option 1 is selected, and 105.8 acres if Option 2 is selected. The total 10,210 AUMs within the allotment would be reduced by 3 AUM, or less than one percent of the AUMs within the allotment.

To prevent access by cattle to areas which might be harmful to them, Ormat has committed to fence the reserve pits and power plant sites in conformance with the Gold Book, and has not proposed any Project activities which would substantially limit livestock's access to the undisturbed portions of the Tungsten Mountain Unit area.

Due to the small percentage of allotted acres lost to direct disturbance, fencing of those Project facilities potentially harmful to livestock and the fact that project facilities and practices would not prevent continued access by livestock to the undisturbed lands within the Project Area, no impacts on livestock grazing are expected.

3.4.7.2.2. No Action Alternative

Under the No Action alternative, the Tungsten Mountain Geothermal Development Project as currently proposed would not be constructed or operated, and the affected environment for the Proposed Action would remain the same. Geothermal exploration well drilling and testing activities, as approved under the Tungsten Mountain Geothermal Exploration EA (BLM 2012a), are ongoing and would be allowed to continue (see Section 1.3: Relationships to Statutes, Regulations, Plans and Environmental Analysis).

3.4.8. Wild Horses and Burros

3.4.8.1. Affected Environment

Herd Management Areas (HMA) are areas identified in BLM Land Use Planning for long term management of wild horses or burros. The northwestern portion of the Unit area is within the Clan Alpine HMA. This HMA encompasses approximately 315,000 acres, and is within the appropriate management level (AML) of 612-979 horses.

3.4.8.2. Environmental Consequences

3.4.8.2.1. Proposed Action

There are no Project activities proposed within the Clan Alpine HMA and no impacts are anticipated.

3.4.8.2.2. No Action Alternative

Under the No Action alternative, the Tungsten Mountain Geothermal Development Project as currently proposed would not be constructed or operated, and the affected environment for the Proposed Action would remain the same. Geothermal exploration well drilling and testing activities, as approved under the Tungsten Mountain Geothermal Exploration EA (BLM 2012a), are ongoing and would be allowed to continue (see Section 1.3: Relationships to Statutes, Regulations, Plans and Environmental Analysis).

3.4.9. Water Quality (Surface/Ground)

3.4.9.1. Affected Environment

The Project Area is located in the Edwards Creek Valley Hydrographic Area (Number 133 of 256 in the State of Nevada). This Hydrographic Area is part of the Central Hydrographic Region (Number 10 of 14 in the State of Nevada), which is by far the largest Hydrographic Region in Nevada at nearly 30 million acres. The Edwards Creek Valley Hydrographic Area is relatively small, only 266,240 acres, or less than one percent of the Central Hydrographic Region. The Edwards Creek Valley Hydrographic Area is not a "designated" area or groundwater basin (NDCNR-DWR 2015).

All drainages to the west of the Unit Area in the Clan Alpine range are ephemeral and flow towards the playa only following storm events. There are no other forms of surface water within the Project Area, nor are there any surface thermal manifestations (e.g. hot springs, fumaroles). There are, however, widely scattered small seeps and unregistered, leaking artesian wells outside of the Project Area, located along the apron of the alluvial fan where it overlaps the playa.

Using Google Earth images, 21 anomalous surface features were identified in the vicinity of the Unit Area: 4 features were leaking artesian wells (none of which are documented on the NDWR website), 11 were circular groundwater seeps, 2 were buried fiberglass water storage tanks, and 4 were shallow drainages with vegetation but no surface water. However, none of the features are within the Project Area: four of the features are 1-2 miles east of the Project Area, 7 are a mile or more southeast of the Project Area and 9 are approximately 2 miles south-southwest of the Project Area. Ormat measured the conductivity and temperatures of the 21 surface features in 2015 (see Table 12).

Table 12: Surface Features Evaluation Results, 2015

ID #	UTM		Flow (gpm)	pH	Specific Conductivity (mS)	TDS (mg/L)	Temp (F)	Description
	Easting	Northing						
1[1]	444660	4392659	1	8.6	410		57.2	Old artesian well seeping around base.
2[2]	443951	4391837	seep	9.6	3,700		77.7	Circular 50' across. Muddy water with plants at center.
3[3]	444005	4391770	none	9.3	19,500		79.5	Man-made, 30x100' dark red color. Drains from buried fiberglass tank.
4[2]	443867	4391723	seep					Circular 60' across. Too muddy and shallow to sample.
5[1]	443844	4391735	1	9.8	2,680	1,700	71	15' oblong. Leaking old artesian well. Water trickles up around base. Small pool with clear water and algal growth.
6[2]	443167	4390968	seep	7.7	1,025	730	67	Largest circular area in complex. Fenced.
7[1]	443193	4390914	1	8.3	379	274	56	Small seep below #6. Leaky artesian well. 1 gpm or less bubbles out of top.
8[3]	443262	4390857	none	-	>20,000			Man-made, 30x100' dark red color. Discharge from buried tank.

ID #	UTM		Flow (gpm)	pH	Specific Conductivity (mS)	TDS (mg/L)	Temp (F)	Description
	Easting	Northing						
9[2]	443138	4390877	seep	8.54	4,700	3,320	74.1	40' across. Measured from wet spots between vegetation in center.
10[4]	443011	4390862	seep	-	-	-	-	Small green area with damp soil. No water at surface.
11[4]	442682	4390623	damp	-	-	-	-	Small linear green area along drainage. No water at surface.
12[4]	442638	4390555	damp	-	-	-	-	Small linear green area along drainage. No water at surface.
13[2]	440786	4388302	seep	8.7	360		70.3	Circular 60' across. Water seepage near center in between grass clumps.
14[2]	440660	4388095	seep	7.2	415	292	75.4	Circular 60' across. Water seepage near center in between grass clumps.
15[2]	440450	4388140	seep + well	8.4	398	282	57.7	Circular 50' across. Small amount of seepage near center. Two tanks and old well, but no water from well.
16[4]	440362	4387876	dry	-	430	-	-	Not a spring, just 50'x20' dark green area. No surface water.
17[2]	439970	4387650	seep	7.4	440		65.7	Circular 70' across. Large area but very little water.
18[1]	439570	4387753	20	8.8	420	-	63.1	Artesian well. Water with about 1' of head flows from opening at top of well. Nice clear water flows 200' or more to east.
19[2]	439561	4387975	2-3	8.9	435	194	80.8	30x150' wet area, flows to SE. Large wet meadow area.
20[2]	439460	4388011	seep	8.5	505	363	85.6	Circular 30' across. Only small amount of water in very small areas between grass clumps.
21[2]	439532	4388065	seep	8.2	504	357	82.4	Circular area 25' across. Very minor open water.

[1] artesian well

[2] seep

[3] discharge from buried tank

[4] damp soil with no surface water

(Source: Ormat 2015)

In 2010, Ormat collected water quality samples from most of the sites identified above (see Table 13).

Table 13: Summary of Analytical Results, 2010

ID #	Temp (F)	pH	SiO2	Cl	F	HCO3	SO4	Ca	Mg	Na	B	Li
1	61.6	7.9	91	26	2.1	140	56	33	1.9	52	0.28	0.14
1	56.2	7.96	89	26	2.1	130	55	31	1.8	49	0.27	0.13

2	53.3	7.46	94	42	7.9	230	76	12	1.1	140	0.97	0.29
4	56	7.48	80	36	8	190	84	13	1.3	120	0.82	0.26
5	66.1	8.16	76	25	5.1	120	48	19	1.2	63	0.16	0.17
7	54.4	7.98	76	19	0.95	130	41	39	4.3	35	0.12	<0.10
9	50.5	7.33	78	35	5.2	220	70	43	5.5	99	0.72	0.16
13	54.4	7.58	39	15	0.14	140	38	38	6.6	28	0.1	<0.10
15	51.1	7.96	33	14	0.16	140	33	39	7.4	28	<0.10	<0.10
19	52.3	7.23	30	23	0.17	240	45	62	18	36	0.14	<0.10
20	56.8	7.71	22	18	0.17	220	38	57	15	29	0.12	<0.10
21	53.0	7.84	24	15	0.13	190	34	51	14	29	0.13	<0.10
NT-23[1]	180.0	9.39	190	38.9	12.2	63.4	93.9	3.48	0.12	156	1.09	2.7
[1]NT-23 was a Newcrest sample collected from an exploration drill hole.												

(Source: Ormat 2015)

Within the Unit Area, Ormat has drilled 5 shallow core holes (35-23, 45-22, 65-22, 75-22 and 86-22), 1 deep core hole (67-22), 1 slim hole (84-22) and 1 full-size well (56-22). Limited geochemical data is available for the geothermal resource. Water quality samples from 84-22 and the old Newcrest drill hole sample (NT-23) show the geothermal fluid has relatively low total dissolved solids, but has yielded elevated concentrations of sodium, silica, fluoride and lithium, which are the best indicatory elements for this system; however the geothermal fluid also has elevated concentrations of boron and sulfate. The geothermal fluid has moderate salinity and does not meet drinking water standards (Ormat 2015).

As per the NDWR website, seven water wells exist in the general area of the northern Edwards Creek Valley, and are present on the east side of the playa, or several miles southwest of the Project Area. The only water well on or near the Project Area is the Tungsten Mt Mining Company well, drilled in 1959, located in the SW¼, SW¼ Section 22, T21N, R38E. As indicated in the driller's log, the well is 200 feet deep, had an original static water level of 105 feet below ground surface (bgs), was completed in alluvial sand and gravel with intervals of boulders and clay, and was non-artesian (Ormat 2015).

Depth to groundwater was measured in the geothermal wells (except for Well 45-22, as it was inaccessible) and the Tungsten Mining Well in June 2015 (see Table 14). The groundwater is present at relatively shallow depths, but does not rise to the surface. As would be expected, groundwater in general becomes progressively shallower towards the playa; however, the results within the geothermal field are very irregular, and at this time cannot be explained.

Table 14: Depth to Groundwater

Well #	Depth to Water (ft. BGS)
35-23	45.52
65-22	160.10
75-22	104.40
86-22	67.80
WW1 (Tungsten Mining Well)	113.29
67-22	104.62
84-22	102.80
56-22	227.03

Source: Ormat 2015

The artesian wells near the playa margin indicated that groundwater is confined in that area. There are no well logs available to show how deep the wells were drilled, or how they were constructed,

but the wells produce a very small amount of water (except for site 18 to the far south). The groundwater in the Tungsten Mining Well appears to be unconfined as the 1964 NDWR drillers log does not show a confining layer above the water table. Currently, there is no indication of perched water at the site.

Water rights within the Unit Area and vicinity are summarized in Table 15.

Table 15: Summary of Water Rights

App #	File Date	Source	Location	Owner of Record	Annual Duty (AFA)
7973	1/10/1927	Spring	SWNW Sec. 10, T.21N., R38E.	Casey, Michael and Claudia	11.20
V10071	7/29/2011	Spring	SESW Sec. 15, T.21N., R38E.	Casey, Michael and Claudia	0.00
23054	3/21/1966	Underground	NWSW Sec. 22, T.21N., R38E.	Farr, Dale and Evans, John	33.60
81026	7/29/2011	Underground	NWSW Sec. 22, T.21N., R38E.	Casey, Michael and Claudia	22.40
V02057	1/10/1927	Stream	SESW Sec. 29, T.21N., R38E.	Casey, Claudia	301.95
83315	12/23/2013	Underground	SESE Sec. 33, T.21N., R38E.	Casey, Michael and Claudia	400.00
V02058	1/10/1927	Stream	SWNE Sec. 34, T.21N., R38E.	Casey, Claudia	90.23
				TOTAL	859.38
				Vested (stream and spring)	403.38
				Vested (underground)	456.00
				Basin Perennial Yield	8,000

(Source: Ormat 2015)

3.4.9.2. Environmental Consequences

3.4.9.2.1. Proposed Action

The Project could affect water resources in several ways if it would: degrade the quality of surface water by increasing erosion or sedimentation; contaminate surface or groundwater due to materials and/or practices used, or by causing geothermal and non-geothermal mixing; decrease groundwater supply or interfere substantially with groundwater recharge.

Project construction would involve removal of vegetation. Lack of vegetation and periodic disturbance for maintenance in the areas of permanent disturbance would potentially increase sedimentation and decrease infiltration and groundwater recharge. To minimize erosion and stream channel sedimentation, storm water runoff from undisturbed areas around the constructed well pads, power plant sites and substations would be directed into ditches surrounding the disturbed areas and back onto undisturbed ground consistent with best management practices for storm water. Access roads would also be constructed and maintained consistent with the best management practices for road construction applicable to the intended use (temporary or permanent) of the road. To minimize erosion and stream channel sedimentation, grading or clearing of the surface for construction of the gen tie line would occur only when absolutely necessary for safe access or installing the conductors and would only occur within the proposed ROW.

The geothermal wells would be drilled using non toxic drilling mud to prevent the loss of drilling fluids into the rock and the risk of contamination to any aquifers from the drilling fluid. Reserve pits would be constructed at each well site for the containment and temporary storage of drilling mud, drill cuttings, geothermal fluid and storm water runoff from each constructed well pad. Because non toxic drilling mud would be used, the reserve pits are not proposed to be lined. Additionally, the bentonite drilling muds discharged into the reserve pits would tend to act as a liner, in the same way they prevent the loss of drilling fluids in the well bore into the rock. Therefore, contamination of the local ground water aquifers as a result of the temporary discharges into the reserve pits is unlikely.

Also, the geothermal wells would be cased with steel to a depth well below the shallow ground water reservoirs. The casing would be cemented into the ground to prevent the loss of any geothermal resource into, and prevent the contamination or mixing of, any shallow ground waters by the geothermal production or injection fluid. The Underground Injection Control Permit required for the project's injection program from the Nevada Department of Environmental Protection Bureau of Water Pollution Control (NDEP BWPC) would require that the injection program be designed and monitored to prevent degradation of underground sources of drinking water due to the geothermal fluid injection practices.

Over the operational life of the project, accidental discharges of geothermal fluids could contaminate surface or ground waters. These are unlikely because of the frequent inspections and ultrasonic testing of the geothermal pipelines, the pipeline flow and pressure monitoring and the well pump and pipeline valve shutdown features. However, should an accidental discharge occur, a temporary adaptation to the hydrologic monitoring plan to reflect any potential changes necessary to mitigate against groundwater or surface water contamination may be necessary. Contamination of surface or ground waters from spills of petroleum products (such as diesel fuel or lubricants) could also occur. However, this is also unlikely because the well pads and power plant sites, where most petroleum products would be used and stored, would be bermed to contain and control any spills. Further, the containment structures would be lined with an approved liner to prevent surface and ground water contamination.

Water required for construction activities would be obtained from geothermal fluid, an established private ranch source and trucked to each construction or drill site, or a shallow water well(s) drilled from one or more of the proposed drill sites as approved by the BLM. The water would likely be obtained from a shallow well located away from the geothermal system. As necessary, temporary construction water pipeline would be utilized and laid on the side of the existing roads and no additional surface disturbance is anticipated.

Approximately 50,000 gallons per day would be consumed during the first 2 months of construction of the energy plants and 5,000 gallons per day thereafter for 6 months. This one time quantity of construction water would be obtained from the geothermal fluid, an existing private water source or a shallow water well drilled from one or more of the proposed drill sites (see Section 2.1.6). During Project operations, up to approximately 325 gallons of water, to be used for septic purposes, would be consumed per day. This water would also be obtained from the sources identified above and would be trucked to the power plants and stored onsite. Drinking water would be purchased form a commercial bottled water source. As the water consumed by the Project primarily during construction (approximately 18.21 AFA) and to a lesser extent during Project operation (approximately 0.36 AFA), is substantially less than the 8,000 AFA perennial yield estimated for the basin, adverse impacts on the quantity of either surface waters or ground waters are not anticipated.

There are 21 anomalous surface features (4 leaking artesian wells, 11 groundwater seeps, 2 buried storage tanks and 4 shallow drainages with vegetation but no surface water) in the vicinity of the Unit Area (see Table 12). These features are likely the result of groundwater (from precipitation or snow melt) moving down the mountain being forced to the surface by an impermeable, or relatively impermeable, natural barrier. As it is highly unlikely that they share the same water source, there is very little possibility that the geothermal activity proposed for down in the valley floor would have any impact on these features. However, and consistent with mitigation identified during the Tungsten Mountain Geothermal Exploration Project, the following measure is recommended to ensure that there is no impact to the surface features.

Mitigation Measure:

A hydrologic monitoring program would be developed. Monitoring activities would include reporting the number of aquifers encountered, their quality and their saturated thickness. This information would be submitted to the BLM SFO in a timely manner.

One spring (Site #1, as identified in Table 12, Table 13 and Figure 7) is located on the east side of the Unit area near the edge of the Edwards Creek Valley playa in Section 13. To ensure that there is no impact to this spring, Ormat has committed to monitor this spring, consistent with the mitigation measure described below. Following implementation of this mitigation measure, impacts to this spring are not anticipated.

Mitigation Measure

Lessee shall continue to monitor and collect the following hydrologic data from the spring located in the SE¼ of the SE¼ of Section 13:

- **Representative temperature, flow or stage, and basic thermal water chemistry – once immediately prior to the commencement of drilling and once immediately following the completion of drilling;**
- **During the drilling or flow testing of well 57 13 – Representative temperature and flow or stage – once each week until drilling or flow testing is completed;**
- **Each year following the drilling of the first well until all wells have been abandoned – Representative temperature, flow or stage, and basic thermal water chemistry – once per year.**
- **Collected data shall be reported to the BLM Stillwater Field Office Project Lead and Hydrologist in written form within one week of receipt by the lessee.**

3.4.9.2.2. No Action Alternative

Under the No Action alternative, the Tungsten Mountain Geothermal Development Project as currently proposed would not be constructed or operated, and the affected environment for the Proposed Action would remain the same. Geothermal exploration well drilling and testing activities, as approved under the Tungsten Mountain Geothermal Exploration EA (BLM 2012a), are ongoing and would be allowed to continue (see Section 1.3: Relationships to Statutes, Regulations, Plans and Environmental Analysis).

3.4.10. Mineral Resources

3.4.10.1. Affected Environment

The Project Area lies immediately west of the Tungsten Mountain Mine, which mined and shipped principally tungsten ore (as well as lead and zinc ores) (USGS 2015). There are 15 active mining claims on the public lands within the Project Area (see Table 16).

Table 16: Mining Claims Filed Within the Project Area

Serial Number	Legal Description	Claim No.	Claimant
NMC1097413	T. 21 N., R. 38 E., Sec. 21 NE	CAN #100	Gold Range Company, LLC
NMC1097415	T. 21 N., R. 38 E., Sec. 21 NE,NW	CAN #102	Gold Range Company, LLC
NMC1097417	T. 21 N., R. 38 E., Sec. 21 NW	CAN #104	Gold Range Company, LLC
NMC1100574	T. 21 N., R. 38 E., Sec. 21 NE,NW	TMP 8	Michael M. Dobie
NMC1100575	T. 21 N., R. 38 E., Sec. 21 NE T. 21 N., R. 38E., Sec. 22 NW	TMP 9	Michael M. Dobie
NMC1101168	T. 21 N., R. 38 E., Sec. 21 NE,SE	TMP 6	Michael J. Weiser
NMC1101169	T. 21 N., R. 38 E., Sec. 21 NE,NW,SW,SE	TMP 7	Michael J. Weiser
NMC1101242	T. 21 N., R. 38 E., Sec. 21 NE,SE T. 21 N., R. 38E., Sec. 22 NW,SW	TMP 3	Stephen A. Zayac
NMC1101243	T. 21 N., R. 38 E., Sec. 21 NE,SE	TMP 4	Stephen A. Zayak
NMC1106475	T. 21 N., R. 38 E., Sec. 21 SW,SE	TMP 1	Susan R. Ellis
NMC1106476	T. 21 N., R. 38 E., Sec. 21 SE T. 21 N., R. 38E., Sec. 22 SW	TMP 2	Susan R. Ellis
NMC1106477	T. 21 N., R. 38 E., Sec. 21 NE,SE	TMP 5	Susan R. Ellis
NMC1016455	T. 21 N., R. 38 E., Sec. 22 NW,SW	CA 6	Clan Alpine Mining, LLC
NMC988856	T. 21 N., R. 38 E., Sec. 22 NW	TM #1	Clan Alpine Mining, LLC
NMC999286	T. 21 N., R. 38 E., Sec. 22 NW,SW	CA 5	Clan Alpine Mining, LLC

Within the Project Area, there is one expired notice (NVN-89415) for exploration trenches within some of the active mining claims. There are no mining plans approved in the area.

3.4.10.2. Environmental Consequences

3.4.10.2.1. Proposed Action

Of the 15 mining claims within the Project Area, 4 of the claims (TM #1, TMP 2, CA 5 and CA 6) could present surface conflicts as proposed Project components have the potential to overlap the active mining claims. Specifically, geothermal well sites 76-21 and 86-21, and portions of the access road to site 13-22 potentially overlap claim TMP 2. Geothermal well site 24-22 and the pipeline to it potentially overlap claim CA 5 and TM #1. Portions of the geothermal pipeline to well site 54-22 potentially overlap claim CA 6.

BLM manages the land consistent with the Multiple Minerals Development Act (CFR 3740s). Any claimants in the Project Area will be notified by the Stillwater Field Office of the Proposed Action. Neither Ormat nor the claimant(s) may proceed with operations on leased or claimed public lands without notice to the BLM. Should operations be proposed which would result in

potential conflict, BLM would attempt to assist the two parties to reduce or eliminate the conflict, consistent with the multiple mineral development act (43 CFR 3740s). No impacts are anticipated.

Approximately 160,000 cubic yards of surfacing material may be needed for construction of the Project. Aggregate material would be obtained from one of two sources: a private pit located off of Alpine Road, approximately 5.5 miles north of U.S. 50, or from an approximately 5-acre area located within Section 22 of the Project Area. A Mineral Materials permit would be processed for any aggregate pit located on public land managed by the BLM.

3.4.10.2.2. No Action Alternative

Under the No Action alternative, the Tungsten Mountain Geothermal Development Project as currently proposed would not be constructed or operated, and the affected environment for the Proposed Action would remain the same Geothermal exploration well drilling and testing activities, as approved under the Tungsten Mountain Geothermal Exploration EA (BLM 2012a), are ongoing and would be allowed to continue (see Section 1.3: Relationships to Statutes, Regulations, Plans and Environmental Analysis).

3.4.11. Visual Resources

3.4.11.1. Affected Environment

Section 102(a)(8) of the FLPMA establishes the policy that public lands be managed in a manner that would protect the quality of scenic values (43 USC §1701(a)(8)). To meet this responsibility, the BLM utilizes the visual resource management (VRM) system (BLM Manual 8400, Manual H-8410-1 and Manual H-8431.

The VRM system is used to manage visual resources in a manner which will protect the quality of the scenic (visual) values, maintain the existing visual quality, and protect unique visual resources that exist on public lands. A Visual Resource Inventory (VRI), which is considered baseline data to establish VRM objectives, was conducted in the CCD in 2011 and established the VRI classes for visual ratings. These ratings describe an area in terms of visual or scenic quality and viewer sensitivity to the landscape (the degree of public concern for an area's scenic quality). The VRI classes describe the existing conditions on the ground and are used in conjunction with the management objectives to determine the VRM objectives.

VRI Classification Definitions:

- VRI Class I: Assigned to all special areas where the current management situation requires maintaining a natural environment essentially unaltered by man, such as Wilderness Areas or Wilderness Study Areas.
- VRI Class II: Highest visual value assigned through the inventory process and based on the combination of Scenic Quality, Visual Sensitivity Levels, and Distance Zones.
- VRI Class III: Moderate visual value based on the combination of Scenic Quality, Visual Sensitivity Levels, and Distance Zones.
- VRI Class IV: Low visual value based on the combination of Scenic Quality, Visual Sensitivity Levels, and Distance Zones.

VRM class designations are assigned based on the VRI in combination with land use allocations and management objectives outlined in the land use plan. Visual resources (the landscape) consist of landform (topography and soils), vegetation, and human-made structures (roads, buildings, and modifications of the land). These elements of the landscape are described in terms of their form, line, color, and texture. The more variety of these elements there is in a landscape, the more interesting or scenic the landscape becomes and the greater the importance to protect the visual resources. Once an area has been assigned a VRM class, the management objectives of that class can be used to analyze and determine if the visual impacts of proposed activities would be within the prescribed amount of change allowed to the landscape characteristics. The Visual Contrast Rating system is used to determine the amount of change that would occur to the landscape from a proposed project.

The VRM system uses four classes to describe different degrees of modification allowed to the landscape and are used to gauge the amount of disturbance an area can tolerate before it exceeds the visual management objectives of the assigned VRM class:

- Class I: The objective of this class is to preserve the existing character of the landscape. The level of change by the activity to the characteristic landscape should be very low and must not attract attention.
- Class II: The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low.
- Class III: The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape can be moderate. Management activities may attract attention, but should not dominate the view of the casual observer.
- Class IV: The objective of this class is to provide for management activities which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high.

The BLM manages landscapes for varying levels of protection and modification, giving consideration to other resource values, land uses, and the scenic quality of the landscape. The analysis area for visual resources includes lands where potential changes to the landscape from the Project may occur.

The Project Area is located in the foothills of the Clan Alpine Mountains on the northwestern side of the Edwards Creek Valley. As is typical of the Great Basin, a heterogeneous landscape is present throughout the Project Area. A northeast trending County dirt road runs through the Project area; U.S. Highway 50 is approximately 8 miles south. Numerous roads and "two tracks" traverse the area.

Visual Contrast Rating

The degree to which a project adversely affects the visual quality of a landscape relates directly to the amount of visual contrast between it and the existing landscape character. The degree of contrast is measured by separating the landscape into major features (land, water, vegetation, structures) then assessing the contrast introduced by the project in terms of the basic design elements of form, line, color, and texture (BLM Manual 8431, Visual Contrast Rating). The degree of contrast introduced by a proposed project with landscape elements is then rated as none, weak, moderate, or strong (see Table 17). The purpose of this method is to reveal elements and

features that cause the greatest visual impact, and to guide efforts to reduce the visual impact of a proposed action or activity. This process is described in detail in Handbook H-8431-1, Visual Resource Contrast Rating, and documented using BLM Form 8400-4. Visual Contrast Ratings Worksheets and Photo Logs for the potential impacts the proposed Project may have on visual quality are provided as Appendix B.

Table 17: Degree of Contrast Ratings

Degree of Contrast	Criteria	Conformance with VRM Class
None	The element contrast is not visible or perceived.	VRM Class I – IV
Weak	The element contrast can be seen but does not attract attention.	VRM Class II – IV
Moderate	The element contrast begins to attract attention and begins to dominate the characteristic landscape	VRM Class III – IV
Strong	The element contrast demands attention, will not be overlooked, and is dominant in the landscape.	VRM Class IV only

(Source: BLM Manual 8431, Visual Contrast Rating)

Key Observation Points

Seven Key Observation Points (KOPs) were chosen for visual contrast rating analysis (see Table 18 and Appendix B).

Table 18: KOP Location and Description

KOP #	Location	Distance from Project	Comments
KOP 1	Point along Alpine Road.	0.5 miles south	Provides first view of proposed gen tie line for motorized travelers heading north from Cold Springs on Highway 50.
KOP 2	Point along Alpine Road.	2.0 miles south	Provides first view of proposed gen tie line (Option 1) for motorized travelers heading north on Alpine Road.
KOP 3	Point along Alpine Road.	2.9 miles south	Provides first view of the proposed gen tie line (Option 2) for motorized travelers heading north on Alpine Road.
KOP 4	Point along Alpine Road.	4.5 miles southwest	Provides first view of the proposed power plants for motorized travelers heading northeast on Alpine Road north of Clan Alpine.
KOP 5	Point along Antelope Road.	7.8 miles southeast	Provides first view of the power plants for motorized travelers heading northwest on Antelope Road.
KOP 6	Point along Highway 50.	8.1 miles southeast	Provides first view of the power plants for motorized travelers heading west on Highway 50 from Austin.
KOP 7	Point along Highway 50.	8.1 miles southeast	Provides first view of the proposed gen tie line for motorized travelers heading southwest on Highway 50.

From each KOP, the viewshed can be divided into three distinct distance zones: the foreground, midground and background (see Table 19).

Table 19: Viewsheds from KOPs

	Foreground	Midground	Background
KOP 1	Consists of open, relatively smooth, flat, slightly concave valley floor sloping south. Vegetation is composed primarily of indistinct sage brush scrub which is low, uniform and continuous with predominate colors of yellow, grays, light tans or browns and occasional green.	Same as foreground.	Consists of rugged terrain comprised of small ridges and canyons and pyramidal, angular shapes that provide dark and light contrasts from shadows. Predominant colors are dark browns and greens.
KOP 2	Consists of open, relatively smooth, flat, slightly concave valley floor sloping south. Vegetation is composed primarily of indistinct sage brush scrub which is low, uniform and continuous with predominate colors of yellow, grays, light tans or browns and occasional green.	Same as foreground.	Consists of rugged terrain comprised of small ridges and canyons and pyramidal, angular shapes that provide dark and light contrasts from shadows. Predominant colors are dark browns and greens.
KOP 3	Consists of open, relatively smooth, slightly rising valley floor sloping north. Vegetation is composed primarily indistinct sage brush scrub which is low, uneven, and sparse with predominate colors of yellow, grays and light tans or browns and green.	Consists of a small ridge perpendicular to the view.	Consists of rugged terrain comprised of small ridges and canyons and pyramidal, angular shapes that provide dark and light contrasts from shadows. Predominant colors are dark browns and greens.
KOP 4	Consists of open, relatively smooth, slightly rising valley floor sloping southwest. Vegetation is composed primarily indistinct sage brush scrub which is low and even but discontinuous with predominate colors of yellow, grays and light tans or browns and occasional green.	Consists of rugged terrain comprised of small ridges and canyons and pyramidal, angular shapes that provide dark and light contrasts from shadows. Predominant colors are dark browns and greens.	Same as middle ground.
KOP 5	Consists of open, relatively smooth, flat, slightly concave alluvial fan sloping north to the dry lake bed. Vegetation is composed primarily of indistinct salt desert scrub and grasses which are low, uniform and continuous with predominant colors of yellow, and light tans or browns and occasional dark green.	Consists of a smooth flat continuous dry lake bed surface with little to no vegetation cover. The predominant color is light tan.	Consists of rugged terrain comprised of small ridges and canyons and pyramidal, angular shapes that provide dark and light contrasts from shadows. Predominant colors are dark browns and greens.
KOP 6	Consists of open, relatively smooth, flat, slightly concave alluvial fan sloping north to the dry lake bed. Vegetation is composed primarily of indistinct salt desert scrub and grasses which are low, uniform and transitional with predominant colors of yellow, and light tans or browns and occasional dark green.	Consists of a smooth flat continuous dry lake bed surface with little to no vegetation cover. The predominant color is light tan.	Consists of rugged terrain comprised of small ridges and canyons and pyramidal, angular shapes that provide dark and light contrasts from shadows. Predominant colors are dark browns and greens.
KOP 7	Consists of open, relatively smooth, flat, slightly concave valley floor sloping south. Vegetation is composed primarily of indistinct sage brush scrub which is low,	Same as foreground.	Consists of rugged terrain comprised of small ridges and canyons and pyramidal, angular shapes that provide dark and light contrasts from

	Foreground	Midground	Background
	uniform and continuous with predominate colors of yellow, grays, light tans or browns and occasional green.		shadows. Predominant colors are dark browns and greens.

Visual Resource Management Objectives

The assignment of VRM objectives in the Carson City CRMP was not completed for all lands in the planning area, including the Project Area; these lands are considered to be unclassified. When no VRM objectives exist, the Carson City CRMP standard operating procedures state that an interim VRM objective is to be assigned at the time a project is proposed. The VRM objectives are to be developed using the guidelines established in BLM Manual H-8410-1 and must conform to land use allocations set forth in the Carson City CRMP.

A review of the VRI was conducted and the current management activities in the area were assessed. The Project Area and surrounding lands are recommended an interim VRM Class III objective to allow for management decisions consistent with the resource allocations for the area. Since the primary resource use within the Project Area is grazing and energy development, establishing an interim VRM Class III objective would be in compliance with current guidelines and policy for VRM.

3.4.11.2. Environmental Consequences

3.4.11.2.1. Proposed Action

The Proposed Action for visual resources is to establish interim VRM objectives for the Project Area until such time as permanent objectives are designated in the ongoing Carson City District Resource Management Plan revision (Carson City RMP). Once the Carson City RMP is final, the management decision regarding VRM would supersede the interim VRM objectives established through this EA should they vary.

The visual contrast rating analysis for all 7 KOPs found the Project components would be visible and create a contrast with the surrounding landscape. The predominant vegetation is under three feet in height and would not provide screening of the project. The horizon line would be broken and discontiguous, thereby reducing contrasting impacts to the landscape lines and form since power lines and facilities would not protrude above the skyline. The Project would be extending existing visual disturbances and introducing additional elements into the landscape. However, non-natural features to line and form are already present from the existing utility poles and lines, man-made structures, fence lines, and dirt roads with exposed natural sediment.

Further, drilling operations would be visible in the Project Area during site construction and intermittently over the life of the Project. The drill rigs proposed for the Project would be up to 175 feet in height. Well drilling operations would typically take about 45 days to complete for each well and would be 24 hours per day, 7 days per week. During drilling operations, lights used when drilling at night would increase rig visibility. Impacts to visual resources from drilling operations would primarily affect the elements of line and color. As drilling operations would occur around the clock, lighting from the drill rigs would affect nighttime darkness. Drilling operations would be temporary and short-term, therefore impacts associated with drilling operations would also be temporary.

Ormat has committed to paint all power plant buildings, structures, pipe, etc. covert green or other appropriate color equivalent to or consistent with the BLM Standard Environmental Color Chart to blend in the area and minimize visibility, unless precluded by safety requirements. Also, the following mitigation measures are recommended to reduce the visual impacts of the Proposed Action.

Mitigation Measures

All drill rig and well test facility lights would be limited to those required to safely conduct the operations, and would be shielded and/or directed in a manner that focuses direct light to the immediate work area.

To maintain dark sky conditions, and minimize visual disturbance, facility perimeter lighting, including lighting used to illuminate walkways, roadways, staging areas and parking areas, would be shielded so that the light would be cast in a downward direction. Low-pressure sodium lighting (or an improved technology, if readily available) would be used to reduce or eliminate detrimental lighting impacts and prevent unnecessary light pollution.

As the degree of contrast and modification imposed on the landscape by the Project would fall within the parameters of VRM Class III objectives, the Project would be in conformance with VRM guidelines and policy. Further, as installation of the prescribed lighting types along with properly shielded lighting would limit light pollution into the natural darkness of the high desert environment, these mitigations would limit lighting impacts to the Nevada "dark skies" as well as limit light pollution effects to local wildlife populations.

3.4.11.2.2. No Action Alternative

Under the No Action alternative, the Tungsten Mountain Geothermal Development Project as currently proposed would not be constructed or operated, and the affected environment for the Proposed Action would remain the same. Geothermal exploration well drilling and testing activities, as approved under the Tungsten Mountain Geothermal Exploration EA (BLM 2012a), are ongoing and would be allowed to continue (see Section 1.3: Relationships to Statutes, Regulations, Plans and Environmental Analysis).

3.4.12. Wilderness/WSA

3.4.12.1. Affected Environment

The north and northwest boundary of the Unit area is adjacent to the eastern edge of the Clan Alpine Wilderness Study Area (WSA) in Edwards Creek Valley.

3.4.12.2. Environmental Consequences

3.4.12.2.1. Proposed Action

Ormat is not proposing any activity within the Clan Alpine WSA therefore direct impacts are not anticipated.

It is Ormat's responsibility to ensure that activities remain outside of the established WSA boundary. In issuance of federal geothermal lease N-92480 to Ormat, a metes and bounds survey of a portion of the boundary of the Clan Alpine WSA in T. 12 N., R. 38 E. was conducted in August-September 2011, so establishment of a boundary is not an issue.

3.4.12.2.2. No Action Alternative

Under the No Action alternative, the Tungsten Mountain Geothermal Development Project as currently proposed would not be constructed or operated, and the affected environment for the Proposed Action would remain the same. Geothermal exploration well drilling and testing activities, as approved under the Tungsten Mountain Geothermal Exploration EA (BLM 2012a), are ongoing and would be allowed to continue (see Section 1.3: Relationships to Statutes, Regulations, Plans and Environmental Analysis).

3.4.13. Land Use Authorizations

3.4.13.1. Affected Environment

There are several land use authorizations granted on public lands within the Project Area (see Table 20).

Table 20: Land Use Authorizations Within the Project Area

Holder	ROW/Activity	Case File No.	Location
Navy Facility Engineering Command – Real Estate	Five mobile threat emitter sites	NVN-073748	T. 21 N., R. 38 E., sec. 23
ORNI 43 LLC	Geothermal lease	NVN-085715	T. 21 N., R. 38 E., sec. 13, 21, 23-28
ORNI 43 LLC	Geothermal lease	NVN-086897	T. 21 N., R. 38 E., sec. 22
ORNI 43 LLC	Geothermal lease	NVN-086898	T. 21 N., R. 38 E., sec. 33, 34
ORNI 43 LLC	Geothermal lease	NVN-088428	T. 21 N., R. 38 E., sec. 23, 26, 27
ORNI 43 LLC	Geothermal lease	NVN-090744	T. 21 N., R. 38 E., sec. 13, 22, 23, 24
ORNI 43 LLC	Geothermal lease	NVN-092480	T. 21 N., R. 38 E., sec. 13, 22, 23
ORNI 43 LLC	Geothermal unit	NVN-088836X	T. 21 N., R. 38 E., sec. 13, 21, 22, 23, 24, 25, 26, 27, 28, 33, 34
Clan Alpine Mining LLC	Notice of intent – gold	NVN-089415	T. 21 N., R. 38 E., sec. 22
Hussey Oil & Gas Inc.	Oil and gas lease (noncompetitive)	NVN-093429	T. 21 N., R. 38 E., sec. 1, 2, 3, 4, 5, 13, 23, 24, 25, 26, 27, 34, 35, 36

3.4.13.2. Environmental Consequences

3.4.13.2.1. Proposed Action

Project facilities and activities would be located away from the authorized ROWs, so there would be no impacts to lands and realty within the Project Area. Although the proposed gen tie line conductors (wires) would pass over several land use authorizations, they would not interfere with any existing ROWs, therefore no impacts are anticipated.

Any Rights-of-Way holders in the Project Area will be notified by the Stillwater Field Office of the Proposed Action. Should operations be proposed which would result in potential conflict between Ormat and a ROW holder, the BLM would attempt to assist the two parties to reduce or eliminate the conflict. No impacts are anticipated.

3.4.13.2.2. No Action Alternative

Under the No Action alternative, the Tungsten Mountain Renewable Geothermal Development Project as currently proposed would not be constructed or operated, and the affected environment for the Proposed Action would remain the same. Geothermal exploration well drilling and testing activities, as approved under the Tungsten Mountain Geothermal Exploration EA (BLM 2012a), are ongoing and would be allowed to continue (see Section 1.3: Relationships to Statutes, Regulations, Plans and Environmental Analysis).

3.4.13.3. Affected Environment

There are several land use authorizations granted on public lands within the Project Area (see Table 20).

Table 20: Land Use Authorizations Within the Project Area

Holder	ROW/Activity	Case File No.	Location
Navy Facility Engineering Command – Real Estate	Five mobile threat emitter sites	NVN-073748	T. 21 N., R. 38 E., sec. 23
ORNI 43 LLC	Geothermal lease	NVN-085715	T. 21 N., R. 38 E., sec. 13, 21, 23-28
ORNI 43 LLC	Geothermal lease	NVN-086897	T. 21 N., R. 38 E., sec. 22
ORNI 43 LLC	Geothermal lease	NVN-086898	T. 21 N., R. 38 E., sec. 33, 34
ORNI 43 LLC	Geothermal lease	NVN-088428	T. 21 N., R. 38 E., sec. 23, 26, 27
ORNI 43 LLC	Geothermal lease	NVN-090744	T. 21 N., R. 38 E., sec. 13, 22, 23, 24
ORNI 43 LLC	Geothermal lease	NVN-092480	T. 21 N., R. 38 E., sec. 13, 22, 23
ORNI 43 LLC	Geothermal unit	NVN-088836X	T. 21 N., R. 38 E., sec. 13, 21, 22, 23, 24, 25, 26, 27, 28, 33, 34
Clan Alpine Mining LLC	Notice of intent – gold	NVN-089415	T. 21 N., R. 38 E., sec. 22
Hussey Oil & Gas Inc.	Oil and gas lease (noncompetitive)	NVN-093429	T. 21 N., R. 38 E., sec. 1, 2, 3, 4, 5, 13, 23, 24, 25, 26, 27, 34, 35, 36

3.4.13.4. Environmental Consequences

3.4.13.4.1. Proposed Action

Project facilities and activities would be located away from the authorized ROWs, so there would be no impacts to lands and realty within the Project Area. Although the proposed gen tie line conductors (wires) would pass over several land use authorizations, they would not interfere with any existing ROWs, therefore no impacts are anticipated.

Any Rights-of-Way holders in the Project Area will be notified by the Stillwater Field Office of the Proposed Action. Should operations be proposed which would result in potential conflict between Ormat and a ROW holder, the BLM would attempt to assist the two parties to reduce or eliminate the conflict. No impacts are anticipated.

3.4.13.4.2. No Action Alternative

Under the No Action alternative, the Tungsten Mountain Renewable Geothermal Development Project as currently proposed would not be constructed or operated, and the affected environment for the Proposed Action would remain the same. Geothermal exploration well drilling and testing activities, as approved under the Tungsten Mountain Geothermal Exploration EA (BLM 2012a),

are ongoing and would be allowed to continue (see Section 1.3: Relationships to Statutes, Regulations, Plans and Environmental Analysis).

3.4.14. Socioeconomics

3.4.14.1. Affected Environment

County Data

The Project Area is located in Churchill County, Nevada. The land area of Churchill County is approximately 4,929 square miles and there are 94.3 square miles of water area in the county. The County seat is Fallon.

As of 2012, the population of Churchill County was estimated at 24,375 people. The population density of the County is 5 persons per square mile. The median resident age in Churchill County is 39 years vs. the Nevada median age of 36.6 years. The gender of the population within the county is 12,508 males and 12,369 females. The racial makeup of the county is 76.5% White Non-Hispanic, 12.1% Hispanic or Latino, 4.0% American Indian and Alaska Native alone, 2.5 % Asian, 1.5% Black Non-Hispanic, and 3.1% identified as two or more races (City Data 2015).

Total employment for Churchill County as of 2013 was at 19,289 persons age 16 and over. As of 2013, the three largest industries providing employment were: educational, health and social services (15.5%); arts, entertainment, recreation, accommodation and food services (12.8%); and Retail trade (12.4%). Of those employed, approximately 67% were in the private sector, 27% were in government and 7% were self employed (City Data 2015, U.S. Census Bureau 2015).

Median income for a household in the County in 2012 was $48,826. The unemployment rate for the county is 6.5% (2014), and is lower than the state's unemployment rate of 9.8%. The unemployment rate for the county has decreased steadily since 2010, when the unemployment rate was 12%. (City Data 2015, U.S. Census Bureau 2015).

There are 10,576 housing units available in Churchill County, of which 9,253 are occupied and 1,503 are unoccupied. Of the occupied units, approximately 5,728 are owner occupied and 3,525 are renter occupied. The homeowner vacancy rate is 1.1%, whereas the rental vacancy rate is 12.0% (City Data 2015, U.S. Census Bureau 2015)

Nevada Renewable Portfolio Standard

On June 6, 2013, the state of Nevada enacted Senate Bill 252, which revised the Nevada Renewable Portfolio Standard (RPS) (NRS 704.7821) to state that by calendar year 2025, no less than 25% of the total amount of electricity sold by NV Energy to its retail customers in Nevada must be from renewable energy sources.

A large source of renewable energy in Nevada is from geothermal energy. Currently, the State of Nevada has 586 MW of nameplate generating capacity from 22 operating geothermal energy plants from 14 different locations (NDOM 2015).

3.4.14.2. Environmental Consequences

3.4.14.2.1. Proposed Action

Implementation of the Project would provide minor economic benefits to the local economy. Construction of the geothermal portions of the Project would likely require a maximum of up to 50 workers; construction of the gen tie line would require approximately 7 workers. Some of these workers would be recruited locally, though most would be specialized workers from outside the local area. A few of the workers (drilling or construction manager, geologist and mud engineer) are expected to live onsite in travel trailers during construction or drilling activities, but most workers would be expected to stay in local hotels, rental housing units or recreational vehicles and campgrounds, primarily in Cold Springs, Middlegate and/or Fallon, all in Churchill County, Nevada. Typically, non-skilled workers do not bring families with them on temporary construction assignments. There are enough available housing/rental units and campground opportunities that the temporary increase in workers for construction should not strain the local communities or stress their resources.

Non-local construction workers are typically paid a per diem rate for daily housing and meal costs. Workers normally spend the per diem on motel accommodations or RV campground space rent, restaurants, groceries, gasoline, and entertainment. In addition, Ormat would likely rent or purchase some portion of the equipment and supplies from local suppliers, primarily in Cold Springs, Middlegate and/or Fallon. This spending activity associated with the construction of the Project would have a small but positive effect on local businesses in Churchill County.

Once operating, the Project would have a staff of approximately 20 employees. Given the small amount of workers needed, the Project would not induce population growth in the area. Neither does the proposed Project create or provide any infrastructure which would indirectly induce substantial population growth.

Once the renewable energy plants are operating, they would contribute to meeting Nevada's RPS. This would be a positive impact.

3.4.14.2.2. No Action Alternative

Under the No Action alternative, the Tungsten Mountain Geothermal Development Project as currently proposed would not be constructed or operated, and the affected environment for the Proposed Action would remain the same. No additional jobs would be created and additional revenues would not occur within Churchill County. There would be no disruption to local services, nor increased demand for goods or lodging at this time. Geothermal exploration well drilling and testing activities, as approved under the Tungsten Mountain Geothermal Exploration EA (BLM 2012a), are ongoing and would be allowed to continue (see Section 1.3: Relationships to Statutes, Regulations, Plans and Environmental Analysis).

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Chapter 4. Cumulative Impacts

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The purpose of the cumulative impacts analysis for the proposed action is to evaluate the combined, incremental effects of human activity within the scope of the project. Council of Environmental Quality (CEQ) regulations defines scope to include connected actions, cumulative actions, and similar actions (40 CFR 1508.25). The Council on Environmental Quality formally defines cumulative impacts as follows:

'...the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time' (40 CFR 1508.7).

For the purposes of this EA, the cumulative impacts are the sum of all past, present (including proposed actions), and reasonably foreseeable future actions (RFFAs) resulting primarily from mining, grazing and public uses. The purpose of the cumulative analysis in this EA is to evaluate the significance of the Proposed Action's contributions to cumulative environment.

As required under the NEPA and the regulations implementing NEPA, this chapter addresses those cumulative effects on the environmental resources in the Cumulative Effects Study Areas (CESAs) which could result from the implementation of the Proposed Action and No Action Alternative, past actions, present actions, and RFFAs. Unless otherwise specified below, the CESA for all resources is the Unit Area and gen tie line corridor.

For the purposes of this analysis and under federal regulations, 'impacts' and 'effects' are assumed to have the same meaning and are interchangeable.

4.1. Past, Present and Reasonably Foreseeable Future Actions

The past, present, and reasonably foreseeable future actions applicable to the assessment area are identified as described below.

Table 21: Past Present and Reasonably Foreseeable Future Actions

Project — Name or Description	Status (x)		
	Past	Present	Future
Livestock Grazing	X	X	X
Dispersed Recreation	X	X	X
Mineral Exploration/ geothermal exploration/ abandoned mine land reclamation	X	X	X
Mineral Materials Disposal	X	X	X
Range Improvements (including fencing, wells and water developments)	X	X	X
Utility and other Rights-of-Way	X	X	X

4.2. Cumulative Effects on Air Quality

4.2.1. Proposed Action

Although minimized by the adopted protection measures (see Section 2.1.11), the Proposed Action would generate particulates in the form of fugitive dust from earth moving activities and travel on unpaved roads. Diesel engines used (primarily during earth moving and well drilling) would create combustion emissions, criteria air pollutant precursors and greenhouse gas emissions.

Past and present actions have generated fugitive dust, principally from surface disturbing activities and travel on unpaved roads. Wildfires have and would continue to intermittently contribute emissions to the air basin. There are no known other industrial complexes proposed in the CESA boundary.

As a result of the Project's compliance with the requisite Surface Area Disturbance Permit and Project APMs (see Section 2.1.11), ambient air quality in the Project Area would be maintained. Any increases in fugitive dust, combustion emissions, criteria air pollutant precursors or greenhouse gas emissions would be minimal. Similar air pollutants generated by past, present and reasonably foreseeable future actions are expected to be sporadic and dispersed across the CESA. Cumulative impacts to air quality are anticipated to be negligible.

4.2.2. No Action Alternative

Under the No Action Alternative, impacts to air quality would be limited to those discussed above for the past, present and reasonably foreseeable future actions.

4.3. Cumulative Effects on Vegetation

4.3.1. Proposed Action

Surface disturbance associated with the proposed Project activities would result in the loss of vegetation. Approximately 105 acres of the disturbance within the Project Area (regardless of Option selected) would be long-term, as these areas would remain disturbed over the operational life of the proposed Project. All disturbed areas would be subject to final reclamation following project decommissioning (see Section 2.1.9).

Within the CESA, past, present and RFFAs which have or could have a cumulative effect on the impacts to vegetation are any that would result in surface disturbance. Like much of the public lands BLM administers, the area has been impacted from overland travel, mining, settlements, livestock grazing and wildland fire. These disturbances have altered the ecological processes which maintained the biological integrity of the rangelands and has provided for the introduction and expansion of exotic invasive species.

The direct disturbance and removal of vegetation associated with the Proposed Action would be cumulative with these past, present, and reasonably foreseeable future effects to vegetation. However, as mitigation measures and Project reclamation would limit effects to relatively small areas and short periods of time, no cumulative impacts to vegetation are anticipated.

4.3.2. No Action Alternative

Under the No Action Alternative, impacts to vegetation would be limited to those discussed above for the past, present and reasonably foreseeable future actions.

4.4. Cumulative Effects on Soils

4.4.1. Proposed Action

Ground disturbing activities associated with the construction, operation, maintenance, and decommissioning of the Proposed Action, along with other past, present, or RFFAs, could result in a cumulative effect on soil resources. With the Proposed Action, ground disturbing activities would increase the potential for down gradient soil loss through wind- and water-driven erosion. While soil erosion BMPs would be in place for the Project, localized soil erosion can be expected, given the acreage disturbed, typically dry soil conditions, and occurrence of high winds in the development area. These residual impacts would be most prevalent on dry, windy days, when wind-driven erosion on denuded surfaces would be most likely to occur. When combined with other RFFAs, the Proposed Action would result in an incremental addition to soil resource related impacts. It is assumed all reasonably foreseeable development on BLM lands near the Project would be subject to similar design considerations and site-specific environmental analysis to reduce the potential cumulative impacts to soil resources.

4.4.2. No Action Alternative

Under the No Action Alternative, impacts to soils would be limited to those discussed above for the past, present and reasonably foreseeable future actions.

4.5. Cumulative Effects on General Wildlife (Including Migratory Birds and Special Status Species

4.5.1. Proposed Action

The cumulative effects identified would be similar for general wildlife, migratory birds, and sensitive and special status plant and wildlife species.

The Proposed Action would result in the long term loss of approximately 105 acres of wildlife habitat and direct displacement of wildlife over the life of the Project. Direct effects could also include injury or mortality during surface-clearing activities. Project-generated noise and human activity would also deter some wildlife from using the area surrounding the project. Increased wildlife mortality and injury from collisions would result from increased vehicular traffic associated with the Proposed Action. Habitat fragmentation resulting from the project facilities and activities would affect various types of wildlife.

Disturbance to, loss of and fragmentation of wildlife habitat resulting from the Proposed Action would be cumulative with past and present actions and RFFAs implemented in the CESA. Indirect effects could result from human activity and noise surrounding projects. The extent of these effects to habitat would depend on the cumulative size of the footprint of these activities, their

locations relative to wildlife habitats, and the duration and frequency of activities disruptive to wildlife. The direct and indirect effects to wildlife from the Proposed Action (summarized above) are very small relative to the wildlife habitat in the vicinity and region, and wildlife should be able to move from away from small areas of direct disturbance and into adjacent suitable habitat. Reclamation of disturbed areas, as proposed by the Project, could reestablish habitat for wildlife. Thus, overall cumulative effects to wildlife would be negligible. Cumulative effects to individuals of species and local meta-populations utilizing specific sites could be affected, but greater effects to regional populations within the CESA are not expected.

4.5.2. No Action Alternative

Under the No Action Alternative, impacts to general wildlife (including migratory birds and special status species) would be limited to those discussed above for the past, present and reasonably foreseeable future actions.

4.6. Cumulative Effects on Water Quality (Surface and Ground)

4.6.1. Proposed Action

Impacts to water quality could be expected to occur from additional mineral exploration and other reasonably foreseeable activities within the area of cumulative effects. Additional roads could be constructed and mineral exploration holes drilled. Each of these activities would have the potential to degrade surface water quality in the affected areas, although measures requiring the implementation of best management practices for erosion and sedimentation could help reduce the potential effects if implemented for the other actions. Over the operational life of the proposed Project, accidental discharges of geothermal fluids and contamination of surface or ground waters from spills of petroleum products is unlikely. Also, as the water consumed by the Project is substantially less than the perennial yield estimated for the basin, adverse impacts on the quantity of either surface waters or ground waters is not anticipated. Because the proposed Project would have little potential for affecting the quality of either surface waters or ground waters in the proposed Project area due to the adoption of best management practices and adherence to identified mitigation measures, and would have no measurable impact on water quantity, the proposed Project would not contribute to any cumulative impacts to water quality and quantity.

4.6.2. No Action Alternative

Under the No Action Alternative, impacts to water quality (surface and ground) would be limited to those discussed above for the past, present and reasonably foreseeable future actions.

4.7. Cumulative Effects on Visual Resources

4.7.1. Proposed Action

The Proposed Action would add to the existing disturbances which affect visual resources but would be contiguous and consistent with existing disturbances in the area. The level of change to the visual character of the area would also be consistent with the impacts which currently exist, which are moderate in nature, and acceptable for a VRM Class III designation.

Current disturbances in the area include the graded County Road (Alpine Road), off-highway travel routes including graded dirt roads, an electrical gen tie line, previous mineral exploration and grazing disturbances. There are no reasonably foreseeable projects on public lands within the area at this time.

4.7.2. No Action Alternative

Under the No Action Alternative, impacts to visual resources would be limited to those discussed above for the past, present and reasonably foreseeable future actions.

4.8. Cumulative Effects on Socioeconomics

4.8.1. Proposed Action

The Proposed Action would not induce a substantial growth or concentration of population, nor would it cause a substantial net increase in the county expenditures or revenues of Churchill County. The majority of the impacts would occur during construction and decommissioning activities as these are when there would be the highest number of workers at the site. During facility operations, few workers (approximately 20) would be permanent at the site. The Project would not create a substantial demand for public services as only 20 full-time workers are expected throughout the project life and local communities have the available resources (housing, goods and services) to support these workers. There would not be a major increase in impacts to socioeconomics as a result of the implementation of the Project. Cumulative impacts to socioeconomics from the past, present, and RFFAs when combined with the Proposed Action are considered negligible.

4.8.2. No Action Alternative

Under the No Action Alternative, impacts to socioeconomics would be limited to those discussed above for the past, present and reasonably foreseeable future actions.

4.9. Monitoring

In addition to the Adopted Protection Measures identified in EA Section 2.1.11 committed to by Ormat, the following mitigation measures are recommended. The mitigation measures are listed in the order they appear in the above analysis. When a mitigation measure applies to another section, the section name is listed, where applicable.

Vegetation

- Seeding of disturbed areas associated would be completed using the following BLM approved native seed mixture and would be comprised of the following species: fourwing saltbush (Atriplex canescens), squirreltail (Elymus elymoides), siberian wheatgrass (Agropyron fragile), desert needlegrass (Achnatherum speciosum) and small burnet (Sanguisorba minor). Nonnative seeds deemed appropriate by the BLM (based on site specific conditions and concerns) would also be considered.

Migratory Birds

- All surface disturbing activities should occur outside of the migratory bird nesting period (March 1 to July 31 for raptors and April 1 to July 31 for all other avian species). If surface disturbing activities are to occur during this period, pre-construction avian surveys would be conducted in appropriate habitats by qualified biologists (approved by the BLM) prior to surface disturbing activities commencing. The exact area to be surveyed would be based on the scope of the surface disturbing activities (as determined by the BLM). If ground disturbing activities do not take place within 14 days, the areas would be resurveyed. If nesting migratory birds are present, appropriate buffers determined by the BLM, in coordination with the NDOW/USFWS, would be applied until an approved biologist determines the young have fledged or the nest has failed.

The above mitigation measure also applies to Special Status Species.

Special Status Species

- Appropriate buffers would be placed around BLM sensitive plants (e.g. Lahontan beardtongue) and cacti (e.g. grizzlybear prickly pear) where reasonably possible to protect them from surface disturbing activities. In areas where avoidance is not reasonably possible, all BLM sensitive plant species and cacti must be replanted immediately in undisturbed locations containing suitable habitat that is adjacent to the project area. Unless otherwise directed by the BLM botanist, all replanted plants must be watered and otherwise maintained for a period of one year. The goal is to have at least 80% survival of all transplanted plants.

- ORMAT will provide the funding necessary to install bat friendly gates over the entrances of all adits/shafts within the Unit Area that are used by bats for roosting. This will prevent humans from disturbing roosting bats. The construction of bat gates will occur during the spring and/or fall (dependent on bat usage of each structure).

- To reduce impacts to bats from project lighting, motion activated lighting, directed lighting, shielding methods, and or/reduced lumen intensity will be used.

- To reduce impacts to roosting bats during the critical hibernation and/or maternity periods, no construction activities or drilling operations will occur within 0.25 miles of structures used by bats during these critical periods. The hibernation period is generally from October 30 to March 30, and the maternity period is generally from May 15 to July 30. It must be stated that these dates will vary by species and are influenced by annual climatic conditions.

- If hydrologic monitoring indicates that project related activities are resulting in the desiccation of important bat foraging/drinking areas within and immediately adjacent to the Project Area, ORMAT will maintain an artificial water source within the Unit Area that will provide water and foraging opportunities for bats. The artificial water source could also be used to deter bats from drinking/foraging around reserve pits (if reserve pits contain liquids that are harmful to bats).

Water Quality (Surface and Ground)

- A hydrologic monitoring program would be developed. Monitoring activities would include reporting the number of aquifers encountered, their quality and their saturated thickness. This information would be submitted to the BLM SFO in a timely manner.

- Lessee shall continue to monitor and collect the following hydrologic data from the spring located in the SE¼ of the SE¼ of Section 13:

- Representative temperature, flow or stage, and basic thermal water chemistry – once immediately prior to the commencement of drilling and once immediately following the completion of drilling;
- During the drilling or flow testing of well 57 13 – Representative temperature and flow or stage – once each week until drilling or flow testing is completed;
- Each year following the drilling of the first well until all wells have been abandoned – Representative temperature, flow or stage, and basic thermal water chemistry – once per year.
- Collected data shall be reported to the BLM Stillwater Field Office Project Lead and Hydrologist in written form within one week of receipt by the lessee.

The above mitigation measures also apply to Special Status Species.

Visual Resources Management

- All drill rig and well test facility lights would be limited to those required to safely conduct the operations, and would be shielded and/or directed in a manner that focuses direct light to the immediate work area.
- To maintain dark sky conditions, and minimize visual disturbance, facility perimeter lighting, including lighting used to illuminate walkways, roadways, staging areas and parking areas, would be shielded so that the light would be cast in a downward direction. Low-pressure sodium lighting (or an improved technology, if readily available) would be used to reduce or eliminate detrimental lighting impacts and prevent unnecessary light pollution.

The above mitigation measures also apply to Migratory Birds, Special Status Species and General Wildlife

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Chapter 5. Preparers

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5.1. List of Preparers

Name	Title	Responsible for the Following Section(s) of this Document
BLM Stillwater Field Office		
Linda Appel	Rangeland Management Specialist	Air Quality, Livestock Grazing, Wild Horse and Burros, Vegetation
Ken Depaoli	Geologist	Minerals
Chris Kula	Wildlife Biologist	Migratory Birds, Threatened or Endangered Species (animals), BLM sensitive species (animals), BLM sensitive species (plants), General Wildlife
Angelica Rose	Planning and Environmental Coordinator	NEPA Compliance, Socioeconomics
Matt Simons	Realty Specialist	Land Use Authorizations, Visual
Michelle Stropky	Hydrologist	Water Quality (Surface/Ground), Soils
Dan Westermeyer	Outdoor Recreation Planner	Wilderness/WSA, Visual
Jason Wright	Archaeologist	Project Manager, Cultural Resources, Native American Religious Concerns, Paleontology
Altman Environmental Consulting (AEC)		
Heather Altman	Principal	Project Manager, All Resource Sections
Environmental Management Associates (EMA)		
Dwight Carey	Principal	Project Principal
Erin Wielenga	Environmental Specialist	Air Quality, Technical Editing and Formatting
Doug Carey	GIS Analyst	Geographic Information Systems
Stantec Consulting Services Inc.		
Kristi Schaff	Project Manager	Biological Survey Report
Joshua Vittori	Biologist	Biological Survey Report
Cardno ENTRIX		
Benjamin Orcutt	Field Director	Cultural Resources Report
Kim Garcia	Crew Chief	Cultural Resources Report
Sophie Asbury	Field Crew	Cultural Resources Report
Tyrell Milliron	Field Crew	Cultural Resources Report
Christina Rathbone	Field Crew	Cultural Resources Report
Shaun Richey	Field Crew	Cultural Resources Report
Harold Brewer	Principle Investigator	Cultural Resources Report and Visual Simulations

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Chapter 6. Tribes, Individuals, Organizations and Agencies Conferred

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6.1. List of Persons, Agencies and Organizations Conferred

Agency/Group	Name
Churchill County	County commissioners and county staff
Fallon Paiute-Shoshone Tribe	Chairman Len George, Alvin Moyle, Ray Stands, Donna Cossette, Brenda Hooper and members of the Cultural Committee
Nevada Division of Wildlife	Jenni Jeffers
Nevada Natural Heritage Program	Eric S. Miskow
Nevada State Historic Preservation Office	Julie Ernstein, Jessica Axsom

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Chapter 7. References

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EXHIBIT 7 – Appendices A

Appendix A: Federal Geothermal Lease Stipulations

NOTICE

Washington Office Instruction Memorandum No. 2010-171, dated March 5, 2010, supplements the Bureau of Land Management's 2004 National Sage-Grouse Habitat Conservation Strategy and provides the following guidance pertaining to the sale of parcels for oil & gas/geothermal development:

"Attach a lease notice to new leases alerting the lessee that additional conditions will be applied to approvals to develop the lease, including Applications for Permit to Drill (APDs), sundry notices and associated rights-of-way, if future sage-grouse conservation efforts are appropriate."

ENDANGERED SPECIES ACT
SECTION 7 CONSULTATION STIPULATION

The lease area may now or hereafter contain plants, animals, or their habitats determined to be threatened, endangered, or other special status species. BLM may recommend modifications to exploration and development proposals to further its conservation and management objective to avoid BLM-approved activity that will contribute to a need to list such a species or their habitat. BLM may require modifications to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modifications of a designated or proposed critical habitat. BLM will not approve any ground-disturbing activity that may affect any such species or critical habitat until it completes its obligations under applicable requirements of the Endangered Species Act, 16 USC § 1531 *et seq.*, as amended, including completion of any required procedure for conference or consultation.

CULTURAL RESOURCE PROTECTION
LEASE STIPULATION

This lease may be found to contain historic properties or resources protected under the National Historic Preservation Act, American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, EO 13007, or other statutes and executive orders. The BLM will not approve any ground-disturbing activities that may affect any such properties or resources until it completes its obligations under applicable requirements of the NHPA and other authorities. The BLM may require exploration or development proposals to be modified to protect such properties, or it may disapprove any activity that is likely to result in adverse effects that could not be successfully avoided, minimized, or mitigated.

Riparian Areas Stipulation

The lessee shall comply with the following special conditions and stipulations unless they are modified by mutual agreement of the Lessee and the Authorized Officer (AO):

No surface occupancy or disturbance will be allowed within 650 feet (horizontal measurement) of any surface water bodies, riparian areas, wetlands, playas, or 100-year floodplains to protect the integrity of these resources (as delineated by the presence of riparian vegetation and not actual water). Exceptions to this restriction may be considered on a case-by-case basis if the BLM determines at least one of the following conditions apply: 1) additional development is proposed in an area where current development has shown no adverse impacts, 2) suitable off-site mitigation will be provided if habitat loss is expected, or 3) BLM determines development proposed under any plan of operations ensures adequate protection of the resources.

PARCEL	DESCRIPTION OF LANDS
PARCEL NV-10-05-006 THRU PARCEL NV-10-05-008	ALL LANDS
PARCEL NV-10-05-011 THRU PARCEL NV-10-05-018	ALL LANDS
PARCEL NV-10-05-021 THRU PARCEL NV-10-05-022	ALL LANDS
PARCEL NV-10-05-024 THRU PARCEL NV-10-05-036	ALL LANDS
PARCEL NV-10-05-040 THRU PARCEL NV-10-05-044	ALL LANDS
PARCEL NV-10-05-052	ALL LANDS
PARCEL NV-10-05-057	ALL LANDS
PARCEL NV-10-05-058	ALL LANDS

Native American Consultation Stipulation

The lessee shall comply with the following special conditions and stipulations unless they are modified by mutual agreement of the Lessee and the Authorized Officer (AO):

All development activities proposed under the authority of this lease are subject to the requirement for Native American consultation prior to BLM authorizing the activity. Depending on the nature of the lease developments being proposed and the resources of concerns to tribes potentially effected, Native American consultation and resulting mitigation measures to avoid significant impacts may extend time frames for processing authorizations for development activities, as well as, change in the ways in which developments are implemented.

PARCEL	DESCRIPTION OF LANDS
PARCEL NV-10-05-006 THRU PARCEL NV-10-05-008	ALL LANDS
PARCEL NV-10-05-011 THRU PARCEL NV-10-05-018	ALL LANDS
PARCEL NV-10-05-021 THRU PARCEL NV-10-05-022	ALL LANDS
PARCEL NV-10-05-024 THRU PARCEL NV-10-05-036	ALL LANDS
PARCEL NV-10-05-040 THRU PARCEL NV-10-05-044	ALL LANDS
PARCEL NV-10-05-052	ALL LANDS
PARCEL NV-10-05-057	ALL LANDS
PARCEL NV-10-05-058	ALL LANDS

CULTURAL RESOURCE PROTECTION
LEASE STIPULATION

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ENDANGERED SPECIES ACT
SECTION 7 CONSULTATION STIPULATION

The lease area may now or hereafter contain plants, animals, or their habitats determined to be threatened, endangered, or other special status species. BLM may recommend modifications to exploration and development proposals to further its conservation and management objective to avoid BLM-approved activity that will contribute to a need to list such a species or their habitat. BLM may require modifications to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modifications of a designated or proposed critical habitat. BLM will not approve any ground-disturbing activity that may affect any such species or critical habitat until it completes its obligations under applicable requirements of the Endangered Species Act, 16 USC § 1531 *et seq.*, as amended, including completion of any required procedure for conference or consultation.

NATIVE AMERICAN CONSULTATION STIPULATION

The lessee shall comply with the following special conditions and stipulations unless they are modified by mutual agreement of the Lessee and the Authorized Officer (AO):

All development activities proposed under the authority of this lease are subject to the requirement for Native American consultation prior to BLM authorizing the activity. Depending on the nature of the lease developments being proposed and the resources of concerns to tribes potentially effected, Native American consultation and resulting mitigation measures to avoid significant impacts may extend time frames for processing authorizations for development activities, as well as, change in the ways in which developments are implemented.

	Description of Lands
PARCEL NV-08-08-001	T. 20 N., R. 26 E., MDM, Nevada sec. 04, lots 5-12, S2; sec. 08, all; sec. 16, all; sec. 20, lots 1-8, N2; sec. 28, all.
PARCEL NV-08-08-006	ALL LANDS
PARCEL NV-08-08-007	ALL LANDS.
PARCEL NV-08-08-008	ALL LANDS
PARCEL NV-08-08-010	ALL LANDS
PARCEL NV-08-08-011	ALL LANDS
PARCEL NV-08-08-016	ALL LANDS
PARCEL NV-08-08-021	T. 22 N., R. 40 E., MDM, Nevada sec. 04, portion within Carson City; sec. 05, lots 1-4, S2N2, S2; T. 23 N., R. 40 E., MDM, Nevada sec. 28, portion within Carson City; sec. 29, all; sec. 31, lots 1-4, E2, E2W2; sec. 32, all.
PARCEL NV-08-08-022	ALL LANDS
PARCEL NV-08-08-023	ALL LANDS

RIPARIAN AREAS STIPULATION

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No surface occupancy or disturbance will be allowed within 650 feet (horizontal measurement) of any surface water bodies, riparian areas, wetlands, playas, or 100-year floodplains to protect the integrity of these resources (as delineated by the presence of riparian vegetation and not actual water). Exceptions to this restriction may be considered on a case-by-case basis if the BLM determines at least one of the following conditions apply: 1) additional development is proposed in an area where current development has shown no adverse impacts, 2) suitable off-site mitigation will be provided if habitat loss is expected, or 3) BLM determines development proposed under any plan of operations ensures adequate protection of the resources.

	Description of Lands
PARCEL NV-08-08-001	T. 20 N., R. 26 E., MDM, Nevada sec. 04, lots 5-12, S2; sec. 08, all; sec. 16, all; sec. 20, lots 1-8, N2; sec. 28, all.
PARCEL NV-08-08-006	ALL LANDS
PARCEL NV-08-08-007	ALL LANDS.
PARCEL NV-08-08-008	ALL LANDS
PARCEL NV-08-08-010	ALL LANDS
PARCEL NV-08-08-011	ALL LANDS
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PARCEL NV-08-08-022	ALL LANDS
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Description of Lands

PARCEL NV-09-07-007 THRU PARCEL NV-09-07-008	ALL LANDS
PARCEL NV-09-07-015 THRU PARCEL NV-09-07-017	ALL LANDS
PARCEL NV-09-07-020	ALL LANDS
PARCEL NV-09-07-025	
PARCEL NV-09-07-027 THRU PARCEL NV-09-07-028	ALL LANDS
PARCEL NV-09-07-032 THRU PARCEL NV-09-07-033	ALL LANDS
PARCEL NV-09-07-040 THRU PARCEL NV-09-07-051	ALL LANDS
PARCEL NV-09-07-055 THRU PARCEL NV-09-07-057	ALL LANDS
PARCEL NV-09-07-060 THRU PARCEL NV-09-07-067	ALL LANDS
PARCEL NV-09-07-074	ALL LANDS

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PARCEL NV-09-07-060 THRU PARCEL NV-09-07-067	ALL LANDS
PARCEL NV-09-07-074	ALL LANDS
PARCEL NV-09-07-079	ALL LANDS

ENDANGERED SPECIES ACT
SECTION 7 CONSULTATION STIPULATION

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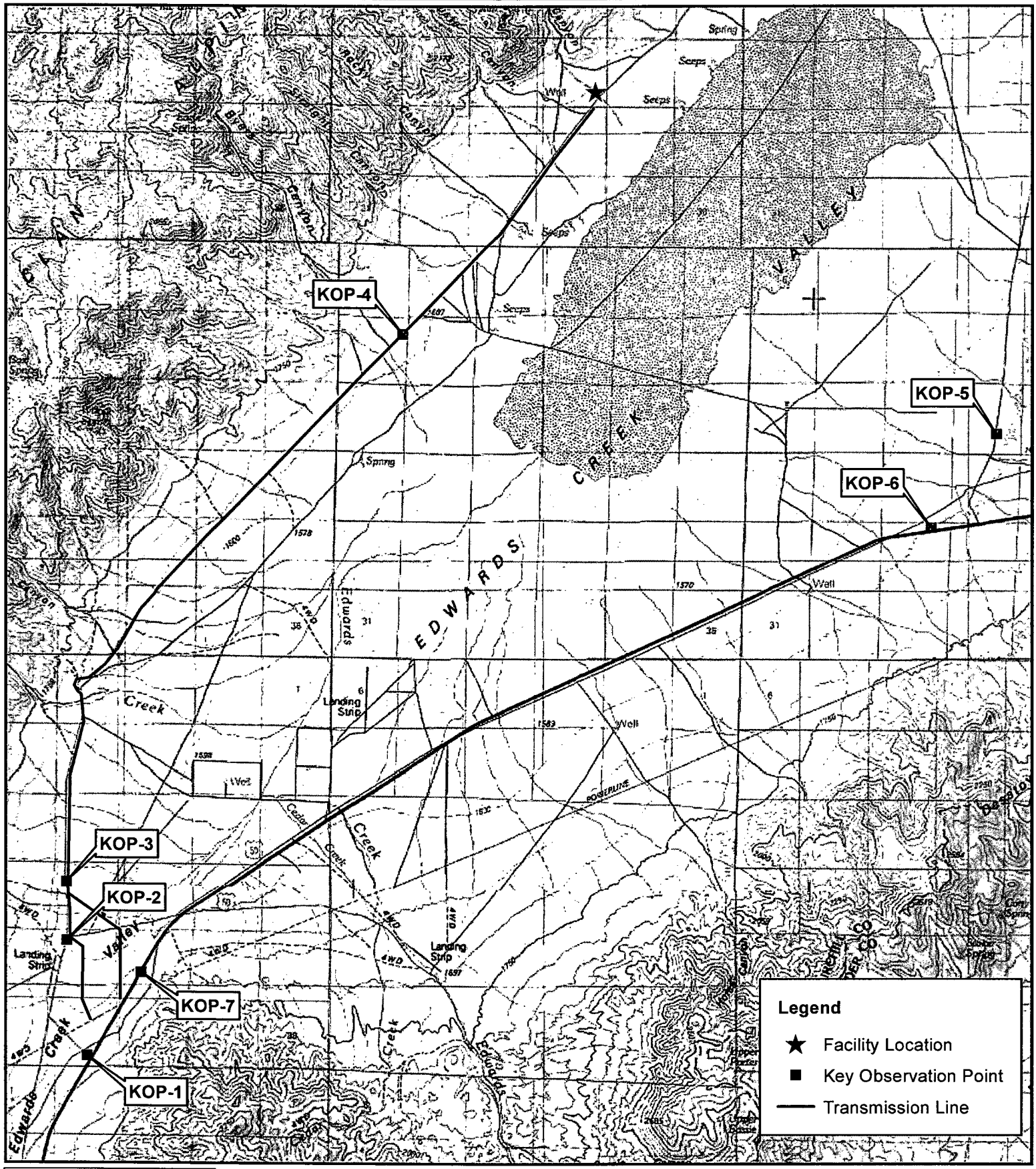
EXHIBIT 7 – Appendices B



Visual Resource Location Map

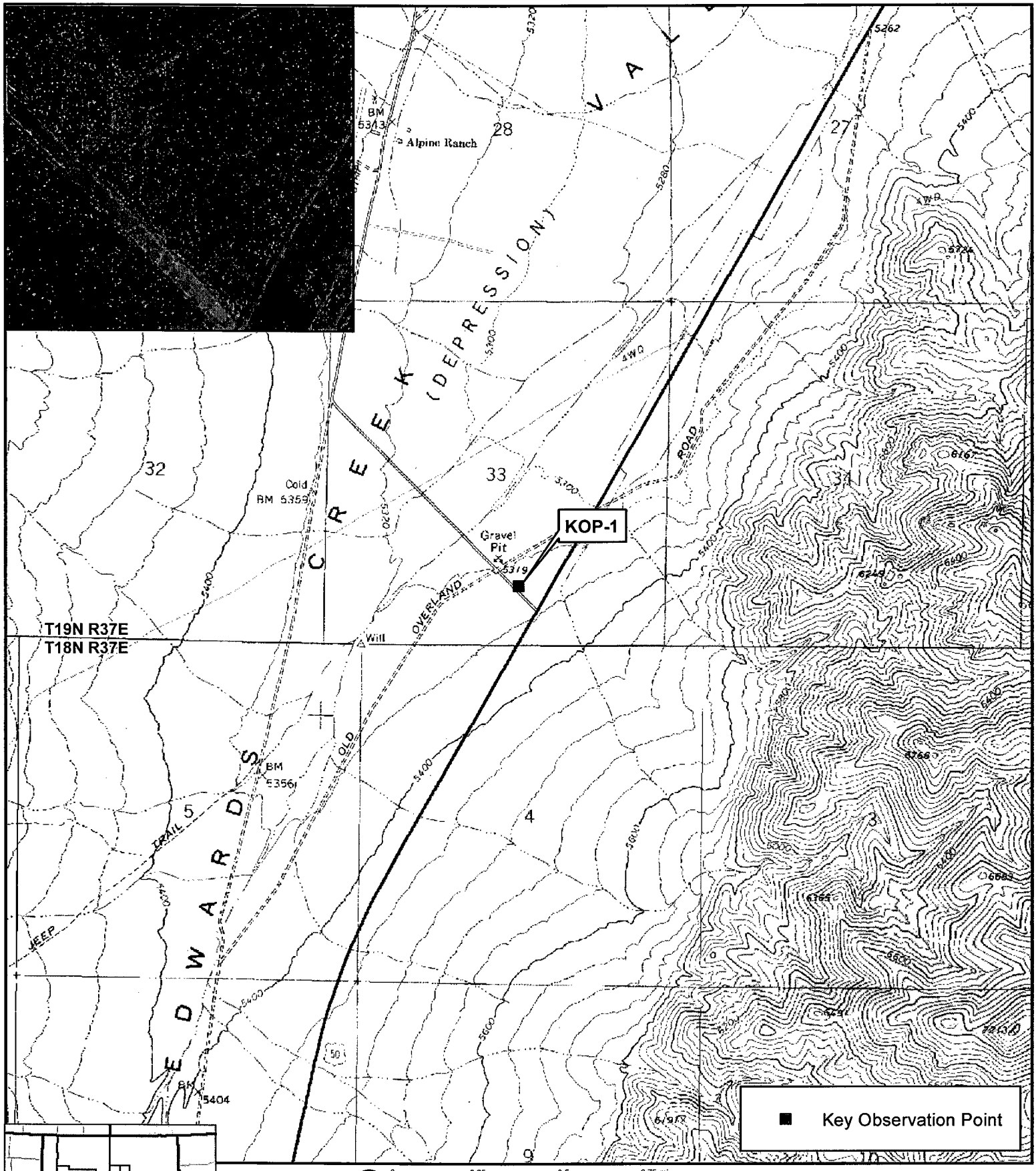
Tungsten Mountain Project
Ormat Technologies, Inc.
Churchill County, Nevada

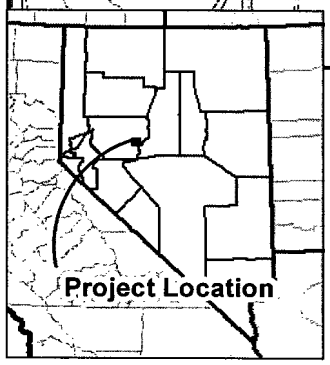
USGS Topo 1:100,000 series:
Edwards Creek Valley, Nevada
Smith Creek Valley, Nevada
T18-21N, R37-39E

Map Prepared By Cardno
9/8/2015

Cardno
Shaping the Future
5496 Reno Corporate Drive
Reno, Nevada 89511
ph. (775) 828-4362
fax (775) 828-4367
www.cardno.com

Map Projection: NAD 1983 UTM Zone 11N





Key Obeservation Point 1 Location Map

Tungsten Mountain Project
Ormat Technologies, Inc.
Churchill County, Nevada

USGS 7.5' Quad:
Cold Springs, Nev. 1969
T19N, R37E, Sec. 33

Map Prepared By Cardno
9/3/2015

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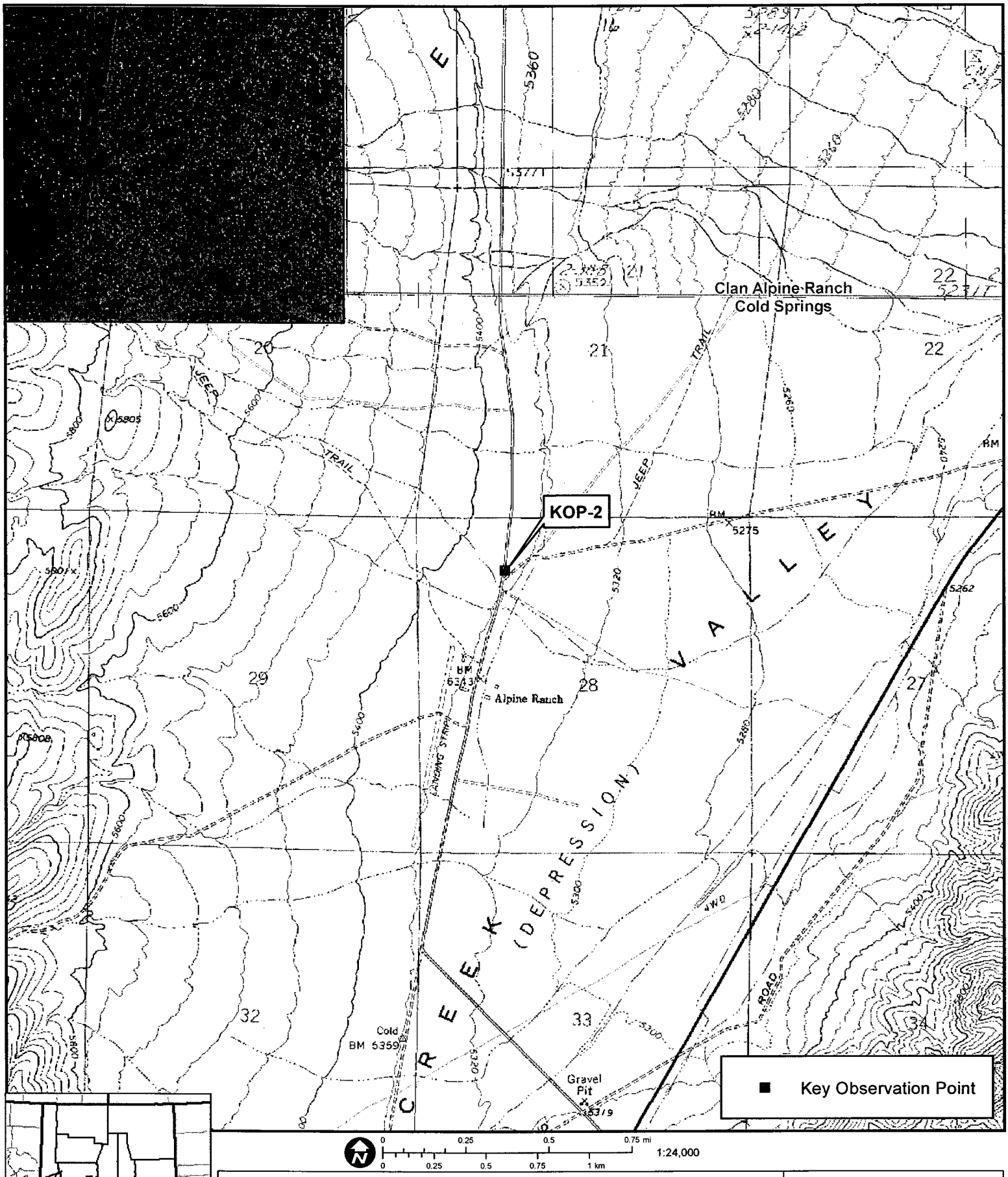

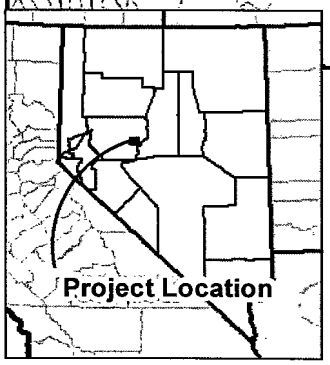

Key Obeservation Point 2 Location Map

Tungsten Mountain Project
Ormat Technologies, Inc.
Churchill County, Nevada

USGS 7.5' Quads:
Clan Alpine Ranch, Nevada 1990
Cold Springs, Nev. 1969
T19N, R37E, Sec. 28

Map Prepared By Cardno
9/3/2015

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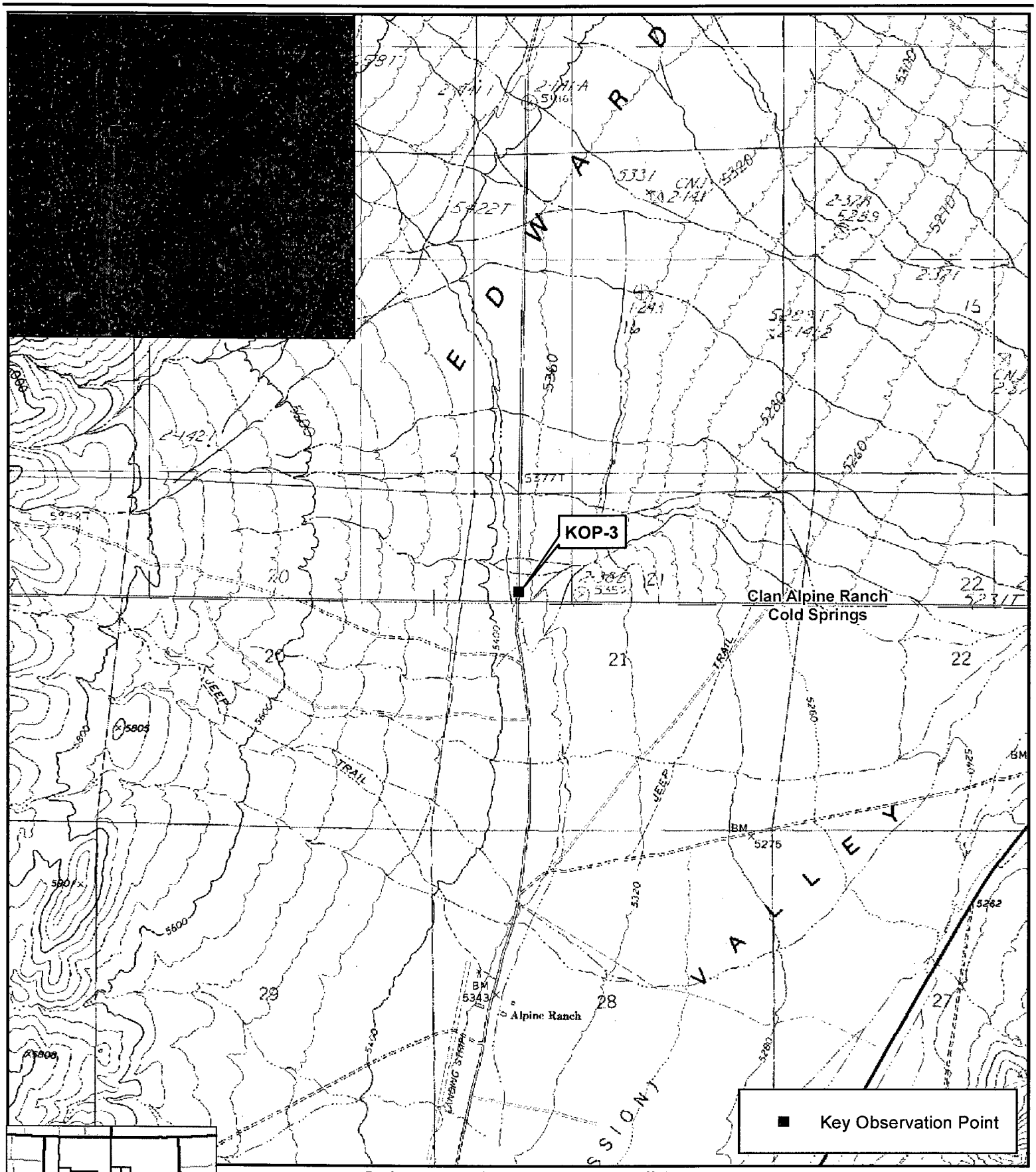

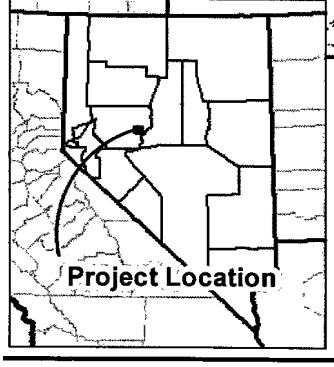

Key Obeservation Point 3 Location Map

Tungsten Mountain Project
Ormat Technologies, Inc.
Churchill County, Nevada

USGS 7.5' Quads:
Clan Alpine Ranch, Nevada 1990
Cold Springs, Nev. 1969
T19N, R37E, Sec. 21

Map Prepared By Cardno
9/3/2015

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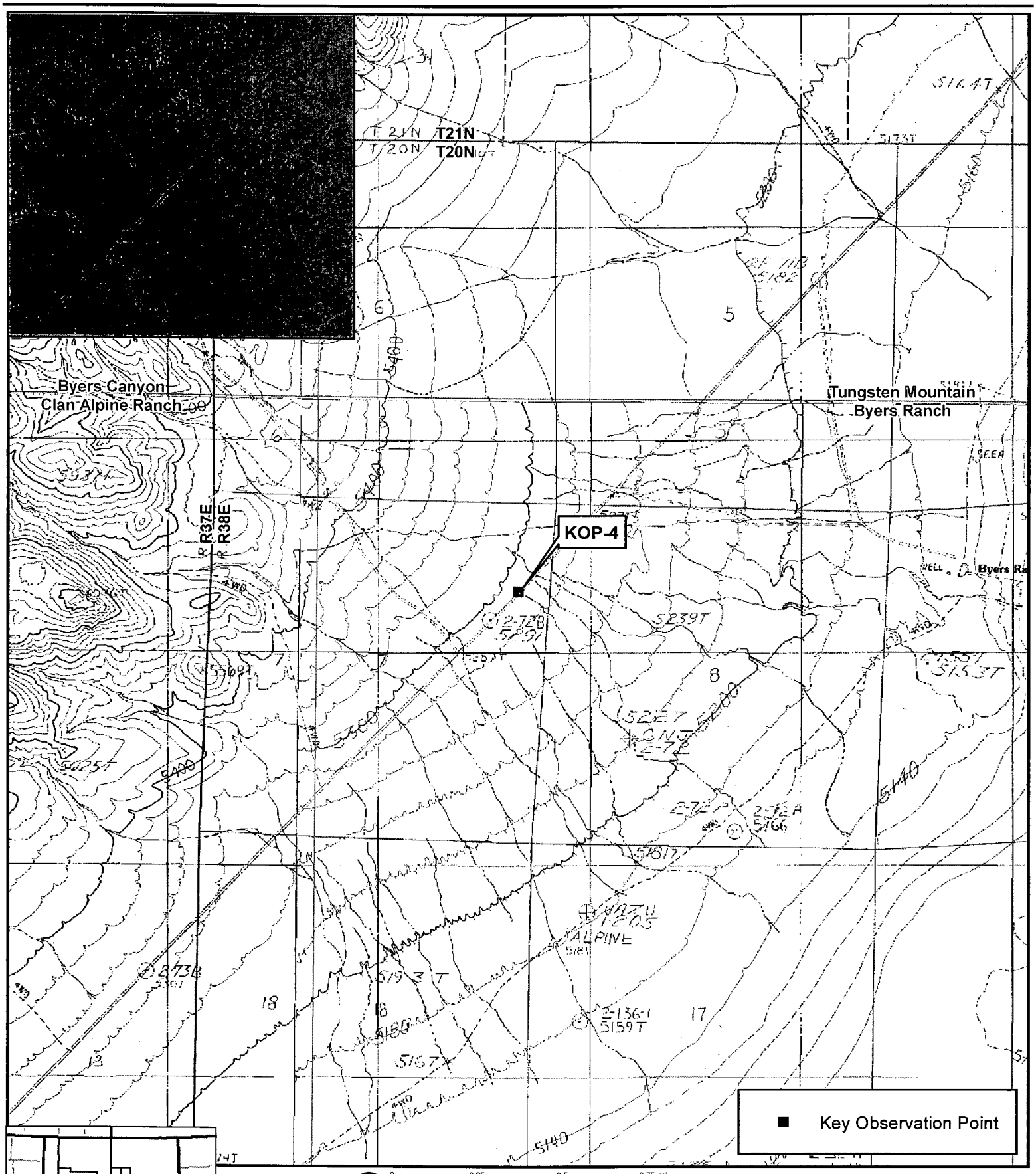
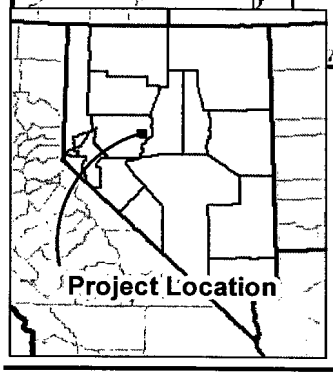
Map Projection: NAD 1983 UTM Zone 11N





Key Obeservation Point 4 Location Map

Tungsten Mountain Project
Ormat Technologies, Inc.
Churchill County, Nevada

USGS 7.5' Quads:
Byers Canyon, Tungsten Mtn., Byers Ranch and Clan Alpine Ranch, Nevada 1990
T20N, R38E, Sec. 7

Map Prepared By Cardno
9/3/2015

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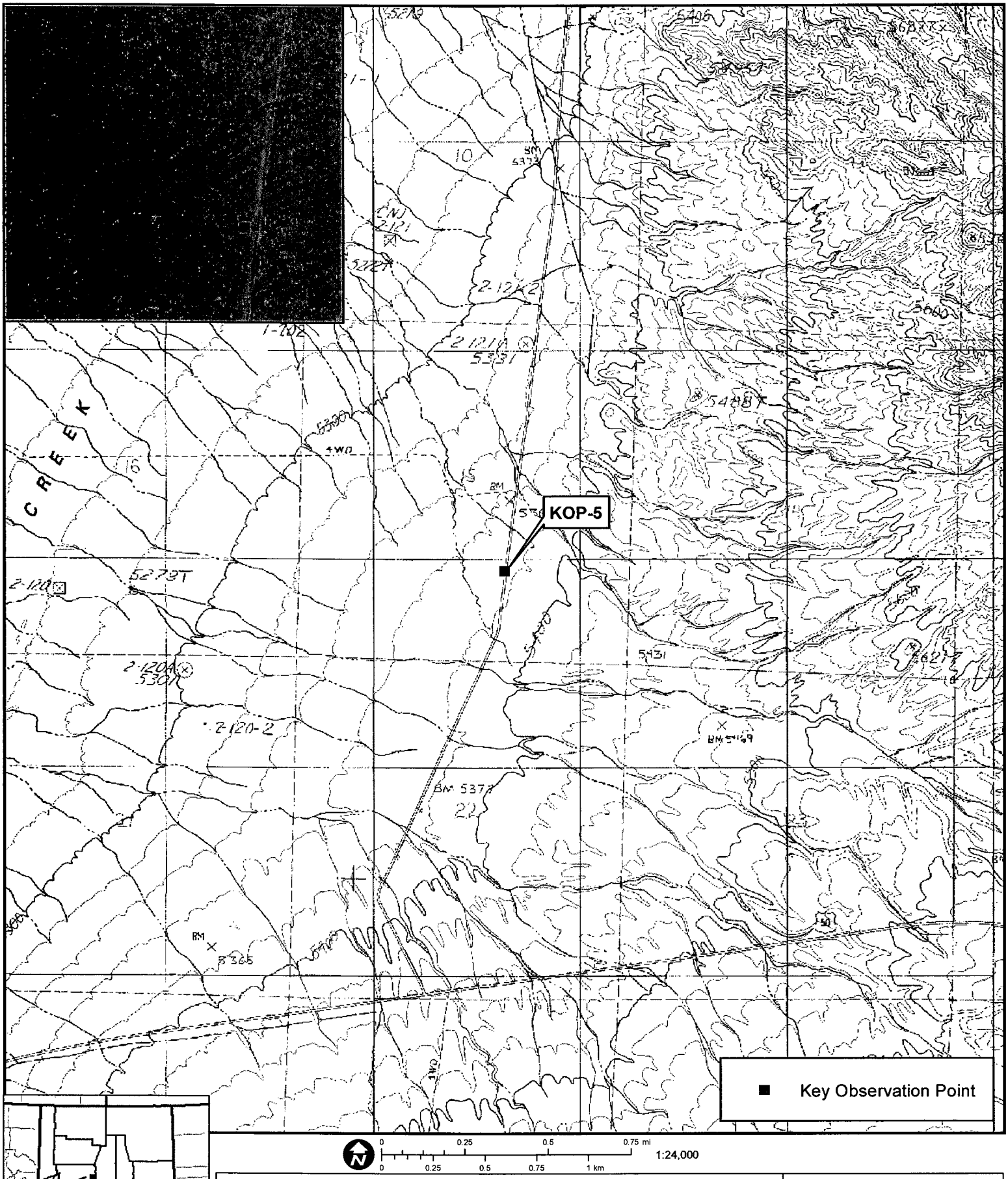
Map Projection: NAD 1983 UTM Zone 11N



Key Obeservation Point 5 Location Map

Tungsten Mountain Project
Ormat Technologies, Inc.
Churchill County, Nevada

USGS 7.5' Quad:
New Pass, Nevada 1990
T20N, R39E, Sec. 15

Map Prepared By Cardno
9/3/2015

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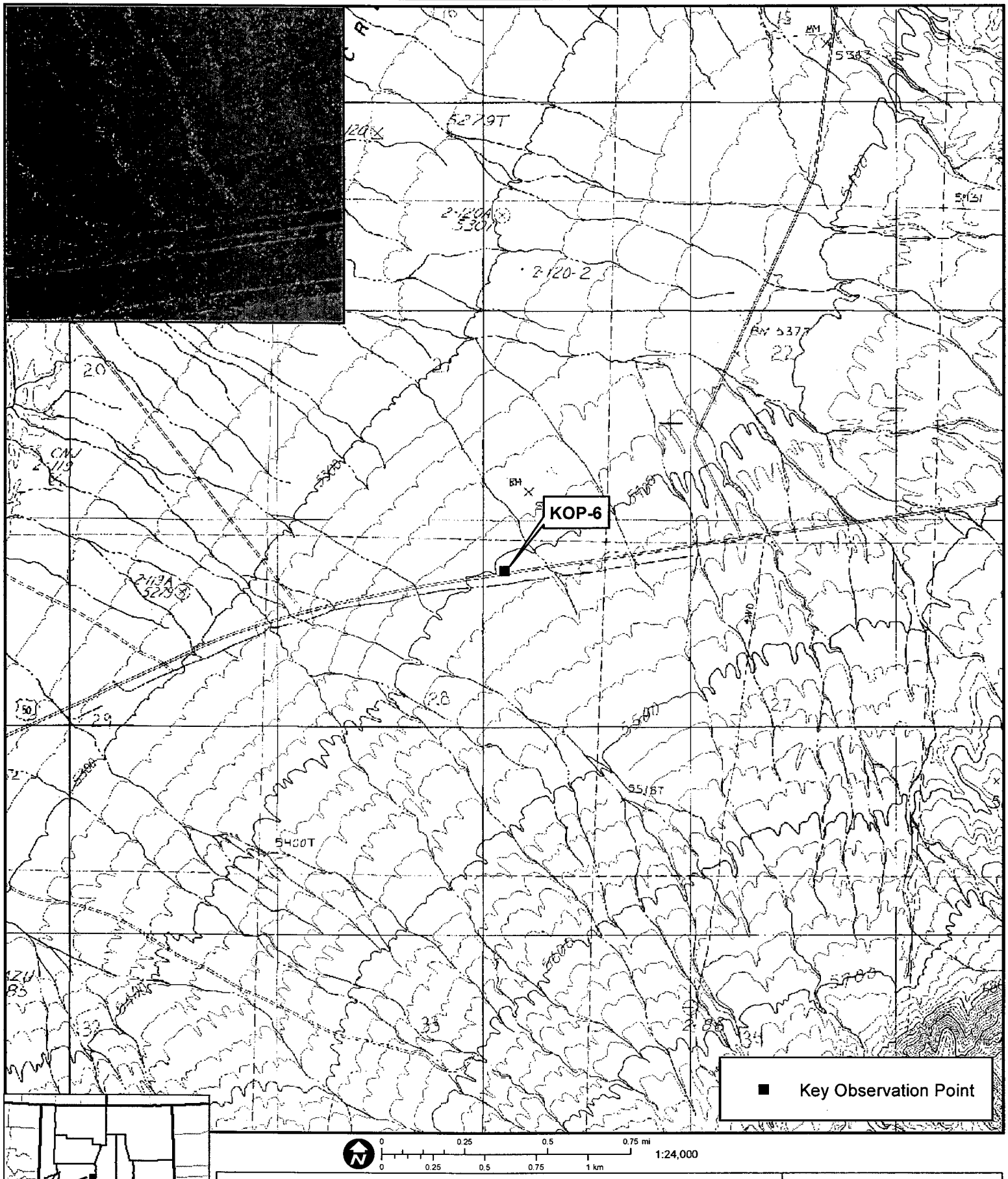

Key Obeservation Point 6 Location Map

Tungsten Mountain Project
Ormat Technologies, Inc.
Churchill County, Nevada

USGS 7.5' Quad:
New Pass, Nevada 1990
T20N, R39E, Sec. 28

Map Prepared By Cardno
9/3/2015

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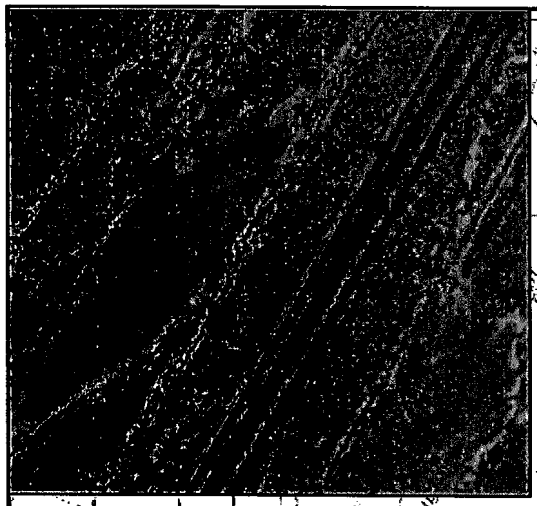

Clan Alpine Ranch
Cold Springs

KOP-7

Alpine Ranch

Cold
5359

Gravel
Pit

Will

T19N R37E
T18N R37E

Key Observation Point

0 0.25 0.5 0.75 mi
0 0.25 0.5 0.75 1 km
1:24,000

Project Location

Key Obeservation Point 7 Location Map

Tungsten Mountain Project
Ormat Technologies, Inc.
Churchill County, Nevada

USGS 7.5' Quads:
Clan Alpine Ranch, Nevada 1990
Cold Springs, Nev. 1969
T19N, R37E, Sec. 27

Map Prepared By Cardno
9/3/2015

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Map Projection: NAD 1983 UTM Zone 11N

Form 8400-4
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: 9/2/15
District: Carson City
Resource Area: Stillwater Field Office
Activity (program): Visual Resources

SECTION A. PROJECT INFORMATION

1. Project Name: Ormat Tungsten Mountain
2. Key Observation Point: KOP 1 Alpine Road
3. VRM Class: Unclassified
4. Location: Township 19N; Range 37E; Section 33
5. Location Sketch: See attached map

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LANDWATER	2. VEGETATION	3. STRUCTURES
FORM	Predominately smooth, uniform in fore and mid-ground, contrasting, rugged, course and discontinuous in background	Indistinct, simple, smooth, low, rounded shrubs and forbes	Prominent, contrasting linear feature from utility poles
LINE	Horizontal, linear unbroken line at valley floor/toe of slope, irregular, continuous horizon line along ridge top. Diagonal/angular lines background.	Continuous, repetitive, simple in fore and mid ground, indistinct in background	Prominent, vertical and repetitive from utility poles
COLOR	Predominately light tans to yellows from alluvial topsoils to dark browns and grays from exposed rock in background range	Monotonous, dull yellows and sporadic grays, and greens	Dark brown utility poles.
TEXTURE	Fore/midground smooth and uniform, non-contrasting. Background contrasting, discontinuous, undulating	Stippled, scattered and continuous, uniform	Smooth and ordered

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LANDWATER	2. VEGETATION	3. STRUCTURES
FORM	Predominately smooth, uniform in fore and mid-ground. Distinct, narrow, contrasting, symmetrical in project area	Removed in project area, no changes undisturbed areas.	Prominent, bold, symmetrical and linear
LINE	Contoured, straight, simple for construction area, no changes for undisturbed areas.	Removed in project area, no changes in undisturbed areas.	Geometric, parallel, hard, angular
COLOR	In construction area, exposed mineral soils tan to brown, whites to grays. No change to undisturbed areas	Removed in project area, no changes in undisturbed areas.	Greens, grays, browns or tans
TEXTURE	Smooth, uniform, matte	Removed in project area, no changes in undisturbed areas.	Power Line Poles uniform, continuous,matte

SECTION D. CONTRAST RATING ☐ SHORT TERM ☒ LONG TERM

1. DEGREE OF CONSTRAST

ELEMENTS	FEATURES: LANDWATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
Form			X		X					X		
Line			X		X					X		
Color		X			X						X	
Texture			X		X						X	

2. Does project design meet visual resource management objectives? ☒ Yes ☐ No (Explain on reverse side)

3. Additional mitigating measures recommended? ☐ Yes ☒ No (Explain on reverse side)

Evaluator's Names	Date
Harold Brewer	9/2/15
Tyrell Milliron	9/2/15

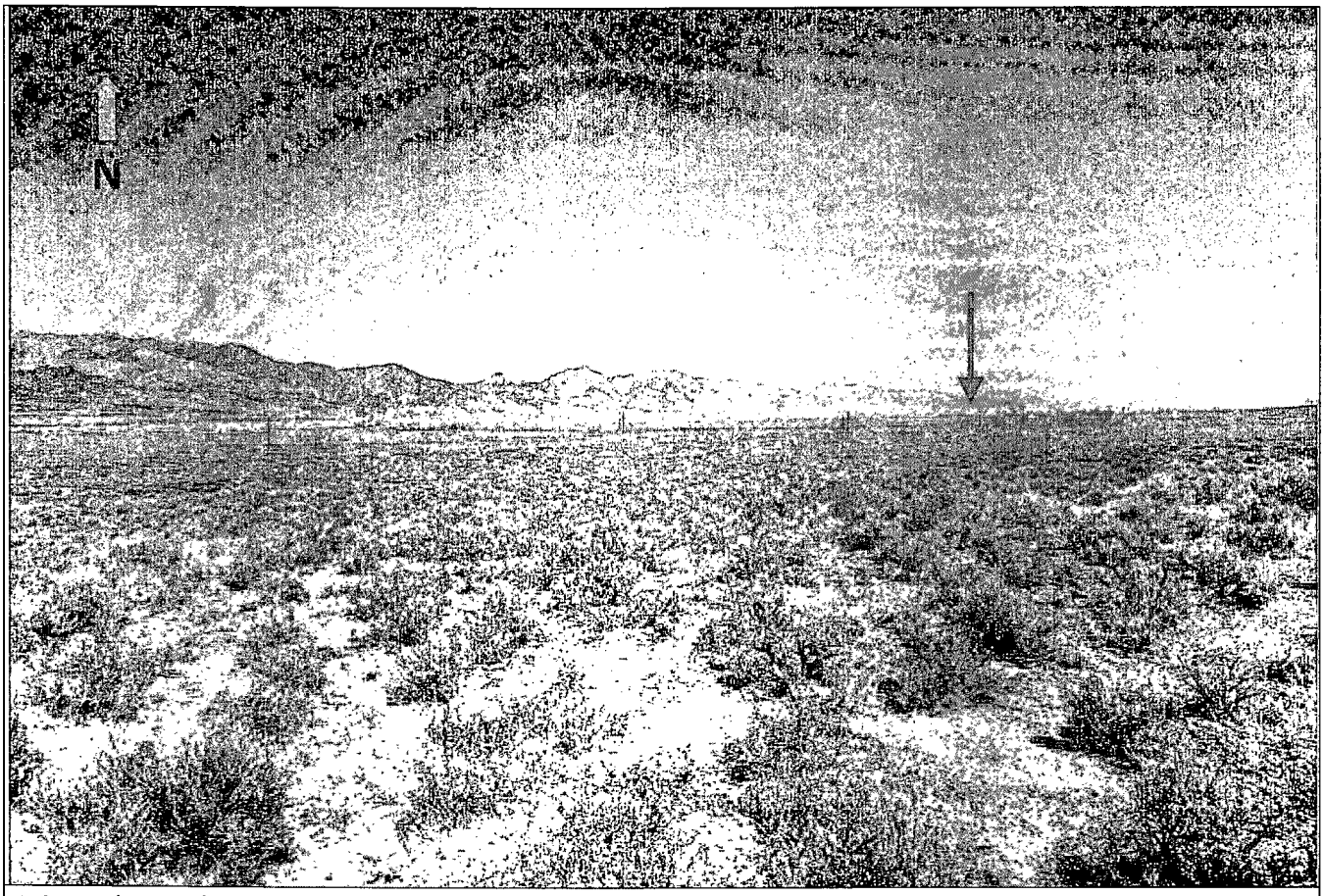
Comments from item 2.

KOP 1 is located approximately 0.5 miles south of the project site and provides the first view of the new transmission line for motorized travelers heading north from Cold Springs on Hwy 50. The observation angle is slightly elevated above the transmission line area allowing for a view of the E-W trending power poles. From the KOP 1 location the viewer would see a mix of existing and new power line poles and the natural landscape of the open valley floor. Similar disturbances preexist on the landscape, so changes to the landscape would be weak. Changes to the landscape form and line would be weak since little surface disturbance is required for project development. Alterations to the vegetation would also be strong within the project area since it will be removed, but the predominant vegetation is low growing sage brush scrub so visual impacts would be low since vegetation outside of the project area will not be disturbed. The greatest impacts to the viewshed will come from the distribution lines and poles. These objects would provide a weak contrast to natural line and form of the landscape. Although the project will introduce a moderate or weak contrast to the form, line, color and texture of the land from this location, the change is considered acceptable for this area with the proposed interim VRM Class III designation.

Additional Mitigating Measures (See item 3)

None. Please refer to Environmental Consequences section for specific mitigation recommendations.

U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094



KOP 1 shows the location of the proposed transmission line connection with the existing transmission line below the red arrow. This is the view for travelers heading north on Alpine Road or Highway 50 to the right of the photo. The new transmission line will be in a north direction from the existing line, running to Alpine Road and on to the power plant at the toe of the range in the background. From KOP 1 the viewshed can be divided into two distinct boundaries; the fore/mid ground and the background. The foreground and midground consists of open, relatively smooth, flat, slightly concave valley floor sloping south. Vegetation is composed primarily of indistinct sage brush scrub which is low, uniform, and continuous with predominate colors of yellow, grays, light tans or browns and occassional green. The background consists of rugged terrain comprised of small ridges and canyons and pyramidal, angular shapes that provide dark and light contrasts from shadows. Predominant colors are dark browns and grays. From this observation point, the casual observer will be exposed to the first view of the project since they will be slightly elevated above the site as they head north on Hwy 50 or Alpine Road. The predominant vegetation is under three feet in height and will not provide screening of the project. The horizon line will be broken and discontiguous, thereby reducing contrasting impacts to the landscape lines and form since power lines will not protrude above the skyline. The project will be extending existing visual disturbances further to the north and east from this viewpoint. However, non-natural features to line and form already exist from the utility lines and poles.

Project: Ormat Tungsten Mountain	**Date:** 9/2/15
Evaluators: Harold Brewer and Tyrell Milliron	**Photo ID**: 1909
Location ID: KOP 1	**Lens Focal Length**: 50 mm
Azimuth: 355^{0} N	**Waypoint ID**:
UTM East: 429158	**UTM North:** 4368570

Form 8400-4
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: 9/2/15
District: Carson City
Resource Area: Stillwater Field Office
Activity (program): Visual Resources

SECTION A. PROJECT INFORMATION

1. Project Name: Ormat Tungsten Mountain
2. Key Observation Point: KOP 2 Alpine Road
3. VRM Class: Unclassified
4. Location: Township 19N, Range 37E, Section 28
5. Location Sketch: See attached map

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LANDWATER	2. VEGETATION	3. STRUCTURES
FORM	Predominately smooth, uniform in fore and mid-ground, contrasting, rugged, course and discontinuous in background	Indistinct, simple, smooth, low, rounded shrubs and forbes	Prominent, contrasting linear feature from utility poles
LINE	Horizontal, linear unbroken line at valley floor/toe of slope, irregular, continuous horizon line along ridge top. Diagonal/angular lines background.	Continuous, repetitive, simple in fore and mid ground, indistinct in background	Prominent, vertical and repetitive from utility poles
COLOR	Predominately light tans to browns from alluvial topsoils to dark browns and grays from exposed rock in background range	Monotonous, dull yellows, sporadic grays, and greens	Dark brown utility poles.
TEXTURE	Fore/midground smooth and uniform, non-contrasting. Background contrasting, discontinuous, undulating	Stippled, scattered and continuous, uniform	Smooth and ordered

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LANDWATER	2. VEGETATION	3. STRUCTURES
FORM	Predominately smooth, uniform in fore and mid-ground. Distinct, narrow, contrasting, symmetrical in project area	Removed in project area, no changes undisturbed areas.	Prominent, bold, blocky, symmetrical and linear
LINE	Contoured, straight, simple for construction area, no changes for undisturbed areas.	Removed in project area, no changes in undisturbed areas.	Geometric, parallel, hard, angular
COLOR	In construction area, exposed mineral soils tan to brown, whites to grays. No change to undisturbed areas	Removed in project area, no changes in undisturbed areas.	Greens, grays, browns or tans
TEXTURE	Smooth, uniform, matte	Removed in project area, no changes in undisturbed areas.	Power Line Poles uniform, continuous,matte

SECTION D. CONTRAST RATING ☐ SHORT TERM ☒ LONG TERM

1. DEGREE OF CONSTRAST

ELEMENTS	FEATURES: LANDWATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
Form		X				X				X		
Line			X			X				X		
Color		X				X					X	
Texture			X			X					X	

2. Does project design meet visual resource management objectives? ☒ Yes ☐ No (Explain on reverse side)

3. Additional mitigating measures recommended? ☐ Yes ☒ No (Explain on reverse side)

Evaluator's Names	Date
Harold Brewer	9/2/15
Tyrell Milliron	9/2/15

Comments from item 2.

KOP 2 is located approximately 2 miles along Alpine Road W, north of Hwy 50 and provides the first view of the new transmission line (Option #1) for motorized travelers heading north along Alpine Road where the Transmission line starts to parallel Alpine Road. The observation angle is level with the transmission line area allowing for a view of the N-S trending power poles. From this location the viewer would see a mix of existing and new power line poles and the natural landscape of the open valley floor. Similar disturbances preexist on the landscape, so changes to the landscape would be weak. Changes to the landscape form and line would be weak since little surface disturbance is required for project development. Alterations to the vegetation would also be strong within the project area since it will be removed, but the predominant vegetation is low growing sage brush scrub so visual impacts would be low since vegetation outside of the project area will not be disturbed. The greatest impacts to the viewshed will come from the distribution lines and poles. These objects would provide a weak contrast to natural line and form of the landscape. Although the project will introduce a moderate or weak contrast to the form, line, color and texture of the land from this location, the change is considered acceptable for this area with the proposed interim VRM Class III designation.

Additional Mitigating Measures (See item 3)

None. Please refer to Environmental Consequences section for specific mitigation recommendations.

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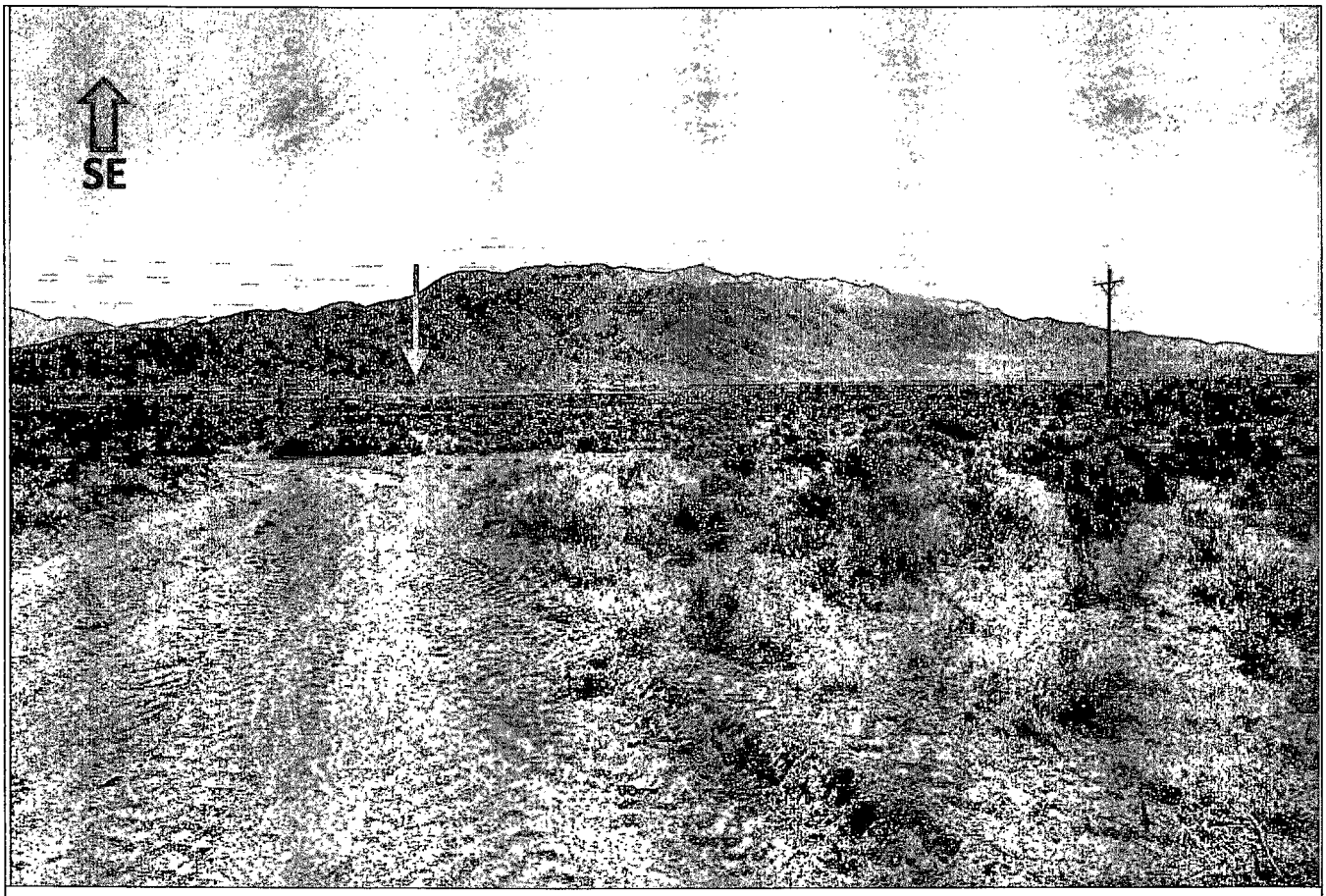

KOP 2 shows the location of the proposed transmission line where it connects and begins to run parallel to Alpine Road (Option #1). The transmission line begins below the red arrow and continues towards the viewer. This is the view to travelers heading north on Alpine Road from Highway 50 which runs against the toe of the slope in the background. From KOP 2 the viewshed can be divided into two distinct boundaries; the fore/mid ground and the background. The foreground and midground consists of open, relatively smooth, flat, slightly concave valley floor sloping south. Vegetation is composed primarily of indistinct sage brush scrub which is low, uniform, and continuous with predominate colors of yellow, grays, light tans or browns and green. The background consists of rugged terrain comprised of small ridges and canyons and pyramidal, angular shapes that provide dark and light contrasts from shadows. Predominant colors are dark browns and grays. From this observation point, the casual observer will be get their first exposure to the transmission line up close. The predominant vegetation is under three feet in height and will not provide screening of the project. The horizon line will be broken and discontiguous, thereby reducing contrasting impacts to the landscape lines and form since distant power lines will not protrude above the skyline. The project will be extending existing visual disturbances closer to Alpine Road at this viewpoint. However, non-natural features to line and form already exist from the utility lines, poles and dirt roads with exposed natural sediment.

Project: Ormat Tungsten Mountain	**Date:** 9/2/15
Evaluators: Harold Brewer and Tyrell Milliron	**Photo ID**: 1910
Location ID: KOP 2	**Lens Focal Length**: 50 mm
Azimuth: 132^{o} SE	**Waypoint ID**:
UTM East: 428681	**UTM North:** 4371264

Form 8400-4
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: 9/2/15
District: Carson City
Resource Area: Stillwater Field Office
Activity (program): Visual Resources

SECTION A. PROJECT INFORMATION

1. Project Name: Ormat Tungsten Mountain
2. Key Observation Point: KOP 3 Alpine Road
3. VRM Class: Unclassified
4. Location: Township 19N; Range 37E; Section 21
5. Location Sketch: See attached map

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LANDWATER	2. VEGETATION	3. STRUCTURES
FORM	Predominately uneven, and random in fore and mid-ground, contrasting, rugged, course and discontinuous in background	Indistinct, simple, smooth, low, rounded shrubs and forbes	Prominent, contrasting linear feature from utility poles
LINE	Horizontal, linear unbroken line at valley floor/toe of slope, irregular, continuous horizon line along ridge top. Diagonal/angular lines background.	Continuous, repetitive, simple in fore and mid ground, indistinct in background	Prominent, vertical and repetitive from utility poles
COLOR	Predominately light tans to yellows from alluvial topsoils to dark browns and grays from exposed rock in background range	Monotonous, dull yellows and sporadic grays, and greens	Dark brown utility poles.
TEXTURE	Fore/midground, and background contrasting, discontinuous, undulating.	Stippled, scattered and continuous, uniform	Smooth and ordered

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LANDWATER	2. VEGETATION	3. STRUCTURES
FORM	Predominately smooth, uniform in fore and mid-ground. Distinct, narrow, contrasting, symmetrical in project area	Removed in project area, no changes undisturbed areas.	Prominent, bold, blocky, symmetrical and linear
LINE	Contoured, straight, simple for construction area, no changes for undisturbed areas.	Removed in project area, no changes in undisturbed areas.	Geometric, parallel, hard, angular
COLOR	In construction area, exposed mineral soils tan to brown, whites to grays. No change to undisturbed areas	Removed in project area, no changes in undisturbed areas.	Greens, grays, browns or tans
TEXTURE	Smooth, uniform, matte	Removed in project area, no changes in undisturbed areas.	Power Line Poles uniform, continuous,matte

SECTION D. CONTRAST RATING ☐ SHORT TERM ☒ LONG TERM

1. DEGREE OF CONSTRAST

ELEMENTS	FEATURES: LANDWATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
Form	X					X				X		
Line	X		X			X				X		
Color		X				X					X	
Texture			X			X					X	

2. Does project design meet visual resource management objectives? ☒ Yes ☐ No (Explain on reverse side)

3. Additional mitigating measures recommended? ☐ Yes ☒ No (Explain on reverse side)

Evaluator's Names	Date
Harold Brewer	9/2/15
Tyrell Milliron	9/2/15

Comments from item 2.

KOP 3 is located approximately 2.9 miles along Alpine Road W, north of Hwy 50 and provides the first view of the new transmission line (Option #2) for motorized travelers heading north along Alpine Road where the transmission line starts to parallel Alpine Road. The observation angle is level with the transmission line area allowing for a view of the N-S trending power poles. From the KOP 2 location the viewer would see a mix of existing and new power line poles and the natural landscape of the open valley floor. Similar disturbances preexist on the landscape, so changes to the landscape would be weak. Changes to the landscape form and line would be weak since little surface disturbance is required for project development. Alterations to the vegetation would also be strong within the project area since it will be removed, but the predominant vegetation is low growing sage brush scrub so visual impacts would be low since vegetation outside of the project area will not be disturbed. The greatest impacts to the viewshed will come from the distribution lines and poles. These objects would provide a weak contrast to natural line and form of the landscape. Although the project will introduce a moderate or weak contrast to the form, line, color and texture of the land from this location, the change is considered acceptable for this area with the proposed interim VRM Class III designation.

Additional Mitigating Measures (See item 3)

None. Please refer to Environmental Consequences section for specific mitigation recommendations.

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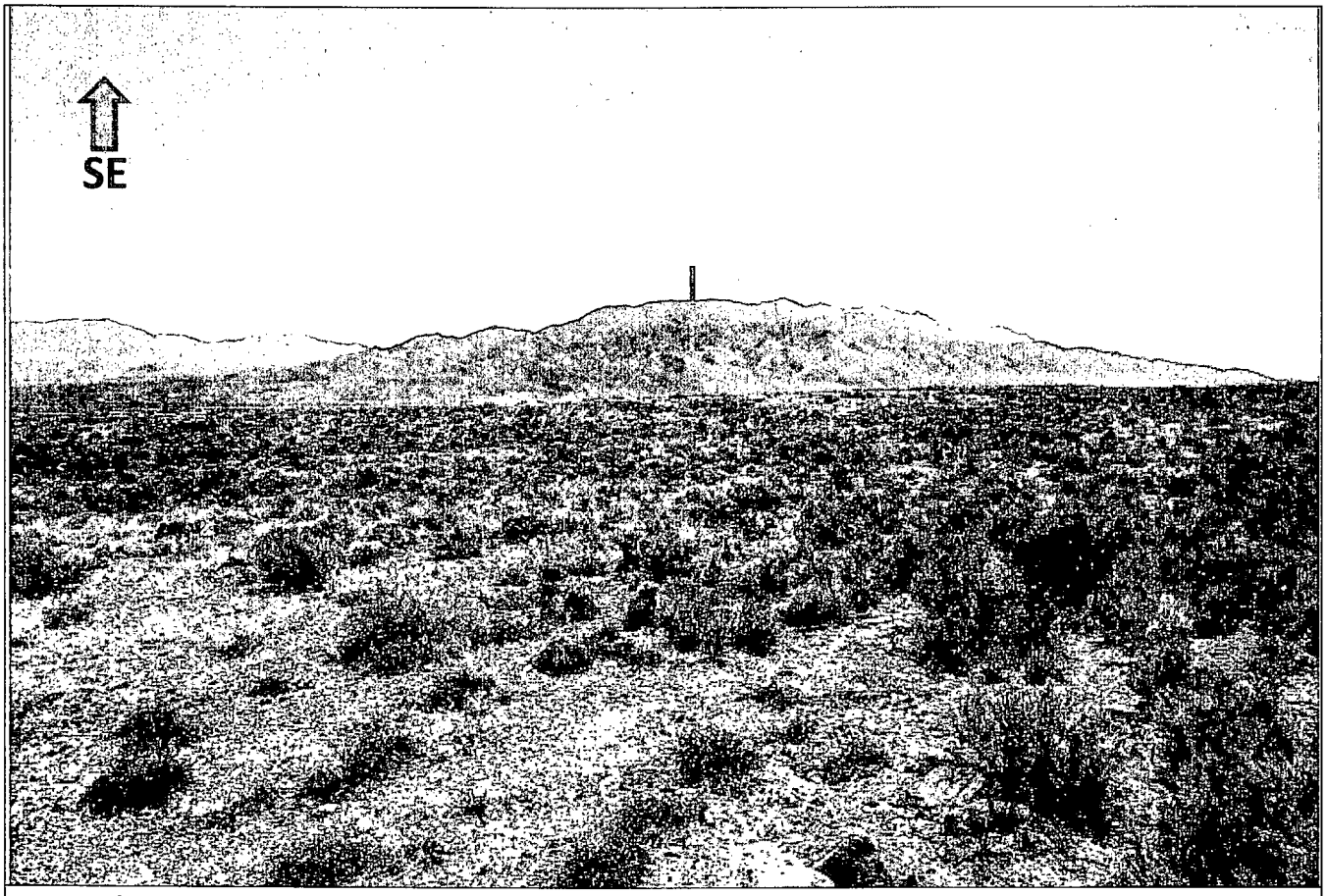


KOP 3 shows the location of the proposed transmission line where it connects and begins to run parallel to Alpine Road (Option #2). The transmission line begins below the red arrow on the back side of the rise and continues towards the viewer. This is the view to travelers heading north on Alpine Road from Highway 50 which runs against the toe of the slope in the background. From KOP 3 the viewshed can be divided into three distinct boundaries; the foreground, midground and the background. The foreground consists of open, relatively smooth, slightly rising valley floor sloping north. Vegetation is composed primarily of indistinct sage brush scrub which is low, uneven, and sparse with predominate colors of yellow, grays, light tans or browns and green. The midground consists of a small ridge perpindicular to the view offering the viewer an inferior view of the transmission poles. The background consists of rugged terrain comprised of small ridges and canyons and pyramidal, angular shapes that provide dark and light contrasts from shadows. Predominant colors are dark browns and grays. From this observation point, the casual observer will be get their first exposure to the transmission line up close. The predominant vegetation is under three feet in height and will not provide screening of the project. The horizon line will be broken and discontiguous, thereby reducing contrasting impacts to the landscape lines and form of the near transmission lines. The distant transmission lines will be hidden by the low rise in the midground. The project will be introducing new visual disturbances closer to Alpine Road at this viewpoint. However, non-natural features to line and form already exist from the utility lines, poles and dirt roads with exposed natural sediment in the nearby area.

Project: Ormat Tungsten Mountain	**Date:** 9/2/15
Evaluators: Harold Brewer and Tyrell Milliron	**Photo ID**: 1913
Location ID: KOP 3	**Lens Focal Length**: 50 mm
Azimuth: 132° SE	**Waypoint ID**:
UTM East: 428666	**UTM North:** 4372639

Form 8400-4
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: 9/2/15
District: Carson City
Resource Area: Stillwater Field Office
Activity (program): Visual Resources

SECTION A. PROJECT INFORMATION

1. Project Name: Ormat Tungsten Mountain
2. Key Observation Point: KOP 4 Alpine Road
3. VRM Class: Unclassified
4. Location: Township 20N; Range 38E; Section 7
5. Location Sketch: See attached map

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LANDWATER	2. VEGETATION	3. STRUCTURES
FORM	Predominately smooth, uniform in fore and dropping off but smooth in the mid-ground. Contrasting, rugged, course and discontinuous in background	Indistinct, simple, smooth, low, rounded shrubs and forbes	Prominent, contrasting linear feature from utility poles
LINE	Horizontal, linear unbroken line at valley floor/toe of slope, irregular, continuous horizon line along ridge top. Diagonal/angular lines background.	Continuous, repetitive, simple in fore and mid ground, indistinct in background	Prominent, vertical and repetitive from utility poles
COLOR	Predominately light tans to yellows from alluvial topsoils to dark browns and grays from exposed rock in background range	Monotonous, dull yellows and sporadic grays, and greens	Mixed light grays gravel surface, tans from native surface road. Dark brown utility poles.
TEXTURE	Fore/midground smooth and uniform, non-contrasting. Background contrasting, discontinuous, undulating	Stippled, scattered and continuous, uniform	Smooth and ordered

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LANDWATER	2. VEGETATION	3. STRUCTURES
FORM	Predominately smooth, uniform in fore and mid-ground. Distinct, narrow, contrasting, symmetrical in project area.	Removed in project area, no changes undisturbed areas.	Prominent, bold, blocky, symmetrical and linear
LINE	Contoured, straight, simple for construction area, no changes for undisturbed areas.	Removed in project area, no changes in undisturbed areas.	Geometric, parallel, hard, angular
COLOR	In construction area, exposed mineral soils tan to brown, whites to grays. No change to undisturbed areas.	Removed in project area, no changes in undisturbed areas.	Greens, grays, browns, and tans
TEXTURE	Smooth, uniform, matte.	Removed in project area, no changes in undisturbed areas.	Power Line Poles and generation station uniform, continuous, and matte. PV modules flat, smooth, uniform, continuous, and glossy.

SECTION D. CONTRAST RATING ☐ SHORT TERM ☒ LONG TERM

1. DEGREE OF CONSTRAST

ELEMENTS	FEATURES: LANDWATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
Form			X		X						X	
Line			X		X						X	
Color		X			X						X	
Texture		X			X						X	

2. **Does project design meet visual resource management objectives? ☒ Yes ☐ No (Explain on reverse side)**

3. **Additional mitigating measures recommended? ☒ Yes ☐ No (Explain on reverse side)**

Evaluator's Names	Date
Harold Brewer	9/2/15
Tyrell Milliron	9/2/15

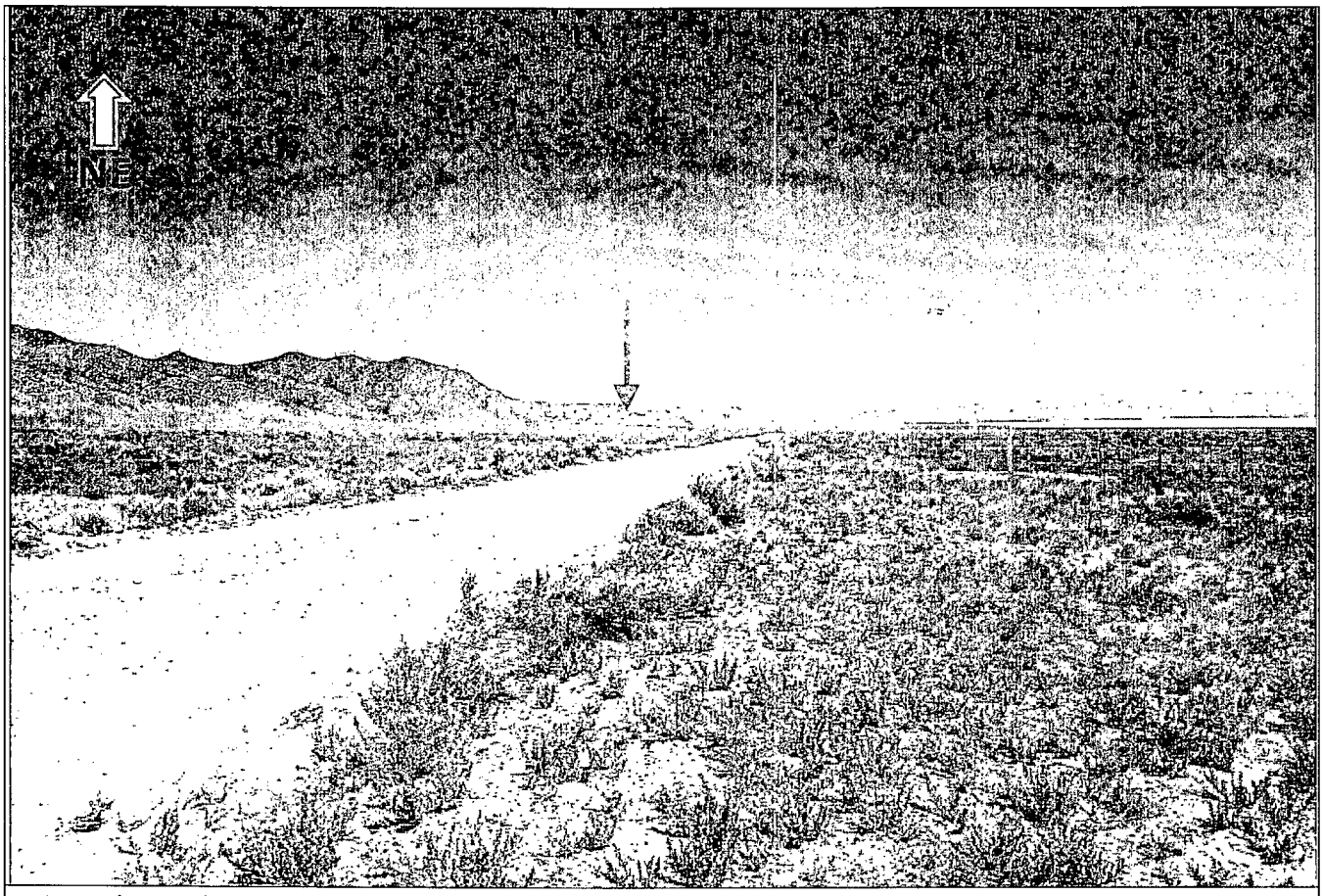
Comments from item 2.

KOP 4 is located approximately 4.5 miles southwest of the main project site and provides the first view of the generation plant for motorized travelers heading north along Alpine Road. The observation angle is level with the transmission line area allowing for a view of the N-S trending power poles and the generation plant to the north east. From the KOP 4 location the viewer would see a mix of new power line poles along the right (south) side of the road and the natural landscape of the open valley floor. There are no similar preexisting disturbances on the landscape, so changes to the landscape would be strong. Changes to the landscape form and line would be weak since little surface disturbance is required for project development in the vicinity of KOP 4. Changes to the landscape form and line nearer to the generation plant would be also be weak due to the distance and they are below the skyline. Alterations to the vegetation would be strong within the project area since it will be removed, but the predominant vegetation is low growing sage brush scrub so visual impacts would be low since vegetation outside of the project area will not be disturbed. The greatest impacts to the viewshed will come from the distribution lines and poles. These objects would provide a weak contrast to natural line and form of the landscape. Although the project will introduce a moderate or weak contrast to the form, line, color and texture of the land from this location, the change is considered acceptable for this area with the proposed interim VRM Class III designation.

Additional Mitigating Measures (See item 3)

Project mitigation measures addressing paint colors for structures, site lighting, reclamation of disturbed areas, and reflectivity of distribution poles will be addressed in the EA. Please refer to Environmental Consequences section for specific mitigation recommendations.

U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094



KOP 4 shows the location of the proposed transmission line (right arrow) as it parallels Alpine Road and the first view of the power generation plant (left arrow). This is the view to travelers heading northeast on Alpine Road north of Clan Alpine. The new transmission line be on the south side of Alpine Road until it nears the power plant (right arrow). The power plant will be constructed at the toe of the range in the midground. From KOP 1 the viewshed can be divided into three distinct boundaries; the foreground, midground and the background. The foreground consists of open, relatively smooth, flat, slightly concave valley floor sloping southwest. Vegetation is composed primarily of indistinct sage brush scrub which is low and even but discontinuous, with predominate colors of yellow, grays, light tans or browns and occassional green. The midground and background consist of rugged terrain comprised of small ridges and canyons and pyramidal, angular shapes that provide dark and light contrasts from shadows. Predominant colors are dark browns and grays. From this observation point, the casual observer will be exposed to the first superior view of the power generation site since they will be slightly elevated above the site as they head northeast on Alpine Road. The predominant vegetation is under three feet in height and will not provide screening of the project. The horizon line will be broken and discontiguous, thereby reducing contrasting impacts to the landscape lines and form since the power facility will not protrude above the skyline. The project will be extending existing visual disturbances further to the north and east from this viewpoint. However, non-natural features to line and form already exist from the exposed natural soil of the roadway which will run parallel to the proposed transmission line.

Project: Ormat Tungsten Mountain	**Date:** 9/2/15
Evaluators: Harold Brewer and Tyrell Milliron	**Photo ID**: 1914
Location ID: KOP 4	**Lens Focal Length**: 50 mm
Azimuth: 29^{0} NE	**Waypoint ID**:
UTM East: 436578	**UTM North:** 4385488

Form 8400-4
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: 9/2/15
District: Carson City
Resource Area: Stillwater Field Office
Activity (program): Visual Resources

SECTION A. PROJECT INFORMATION

1. Project Name: Ormat Tungsten Mountain
2. Key Observation Point: KOP 5 Antelope Road
3. VRM Class: Unclassified
4. Location: Township 20N; Range 39E; Section 15
5. Location Sketch: See attached map

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LANDWATER	2. VEGETATION	3. STRUCTURES
FORM	Predominately smooth, uniform in fore and mid-ground, contrasting, rugged, course and discontinuous in background	Indistinct, simple, smooth, low, rounded shrubs and forbes	Prominent, contrasting linear feature from utility poles
LINE	Horizontal, linear unbroken line at valley floor/toe of slope, irregular, continuous horizon line along ridge top. Diagonal/angular lines background.	Continuous, repetitive, simple in fore and mid ground, indistinct in background	Prominent, vertical and repetitive from utility poles
COLOR	Predominately light tans from alluvial topsoils, light tans to light grays on the dry lake bed, dark browns and grays from exposed rock in background range.	Monotonous, dull yellows, sporadic grays, and greens	Dark brown utility poles.
TEXTURE	Fore smooth and uniform, midground smooth contrasting dry lake. Background contrasting, discontinuous, undulating	Stippled, scattered, uneven, matte	Bold and blocky.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LANDWATER	2. VEGETATION	3. STRUCTURES
FORM	Predominately smooth, uniform in fore and mid-ground. Distinct, narrow, contrasting, symmetrical in project area	Removed in project area, no changes undisturbed areas.	Prominent, bold, blocky, symmetrical and linear
LINE	Contoured, straight, simple for construction area, no changes for undisturbed areas.	Removed in project area, no changes in undisturbed areas.	Geometric, parallel, hard, angular
COLOR	In construction area, exposed mineral soils tan to brown, whites to grays. No change to undisturbed areas	Removed in project area, no changes in undisturbed areas.	Greens, grays, browns, and tans
TEXTURE	Smooth, uniform, matte	Removed in project area, no changes in undisturbed areas.	Generation plant bold, blocky, and matte. PV modules flat, smooth, uniform, continuous, and glossy.

SECTION D. CONTRAST RATING ☐ SHORT TERM ☒ LONG TERM

1. DEGREE OF CONSTRAST

ELEMENTS	FEATURES: LANDWATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
Form			X		X						X	
Line			X		X						X	
Color		X			X						X	
Texture		X			X						X	

2. Does project design meet visual resource management objectives? ☒ Yes ☐ No (Explain on reverse side)

3. Additional mitigating measures recommended? ☒ Yes ☐ No (Explain on reverse side)

Evaluator's Names	Date
Harold Brewer	9/2/15
Tyrell Milliron	9/2/15

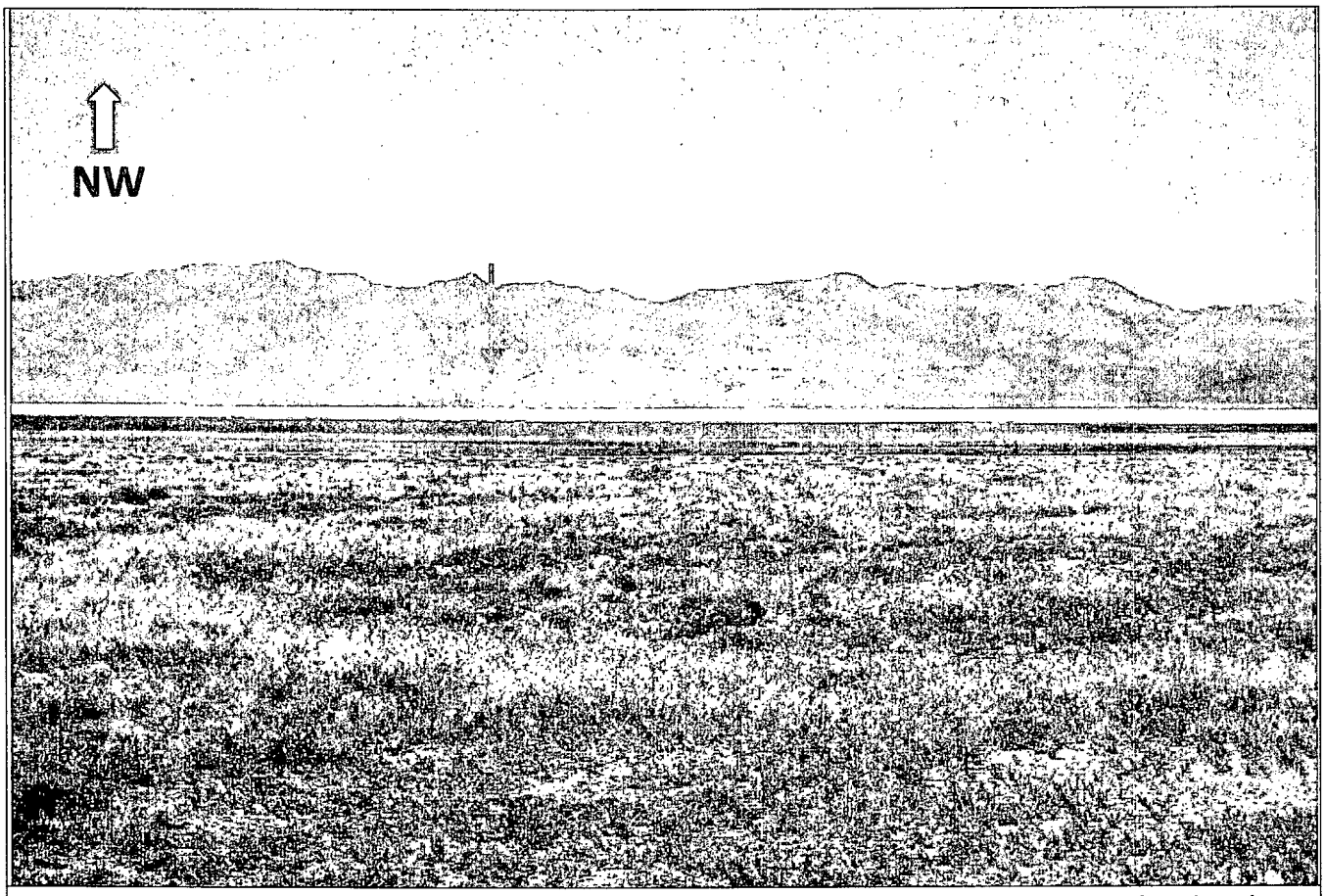
Comments from item 2.

KOP 5 is located approximately 7.8 miles southeast of the main project site and provides the first view of the generation plant for motorized travelers heading northwest along Antelope Road. The observation angle is level with the project area allowing for a view of the the generation plant to the northwest. From this location the viewer would see the generation plant and the PV modules along the left (west) side of the road and the natural landscape of the open valley floor. There are no similar preexisting disturbances on the landscape, so changes to the landscape would be strong. Changes to the landscape form and line would be weak since little surface disturbance is required for project development in the vicinity of KOP 5. Changes to the landscape form and line nearer to the generation plant would be also be weak due to the distance, and they are below the skyline. Alterations to the vegetation would be strong within the project area since it will be removed, but the predominant vegetation is low growing sage brush scrub so visual impacts would be low since vegetation outside of the project area will not be disturbed. The greatest impacts to the viewshed will come from the generation plant and PV modules. These objects would provide a weak contrast to natural line and form of the landscape. Although the project will introduce a moderate or weak contrast to the form, line, color and texture of the land from this location, the change is considered acceptable for this area with the proposed interim VRM Class III designation.

Additional Mitigating Measures (See item 3)

Project mitigation measures addressing paint colors for structures, site lighting, reclamation of disturbed areas, and reflectivity of distribution poles will be addressed in the EA. Please refer to Environmental Consequences section for specific mitigation recommendations.

U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094



KOP 5 shows the location of the proposed generation plant below the red arrow. Travelers heading north on Antelope Road (Road to Antelope) from Highway 50 will get their first view of the project area on the toe of the distant mountains. From KOP 5 the viewshed can be divided into three distinct boundaries; the foreground, midground and the background. The foreground consists of open, relatively smooth, flat, slightly concave alluvial fan sloping north to the dry lake bed. Vegetation is composed primarily of indistinct salt desert scrub and grasses which are low, uniform, and continuous with predominate colors of yellow, and light tans or browns and occassional dark green. The midground consists of a smooth flat continuous dry lake bed surface with little to no vegetation cover. The predominant color is light tan. The background consists of rugged terrain comprised of tall ridges and canyons and pyramidal, angular shapes that provide dark and light contrasts from shadows. Predominant colors are dark browns, grays and blues. The predominant vegetation is under three feet in height and will not provide screening of the project. The horizon line will be above the tallest of the structures, thereby reducing contrasting impacts to the landscape lines and form since facitlities will not protrude above the skyline. The project will be extending existing visual disturbances further to the south from this viewpoint. Specifically, the geothermal structures, PV modules, and distribution line will be in contrast to the existing landscape form and lines since they will be introducing additional elements into the landscape. However, non-natural features to line and form already exist from the utility lines, poles and existing structures in the vicinity of the proposed generation plant.

Project: Ormat Tungsten Mountain	**Date:** 9/2/15
Evaluators: Harold Brewer and Tyrell Milliron	**Photo ID**: 1917
Location ID: KOP 5	**Lens Focal Length**: 50 mm
Azimuth: 301° NW	**Waypoint ID**:
UTM East: 450552	**UTM North:** 4383145

Form 8400-4
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: 9/2/15
District: Carson City
Resource Area: Stillwater Field Office
Activity (program): Visual Resources

SECTION A. PROJECT INFORMATION

1. Project Name: Ormat Tungsten Mountain
2. Key Observation Point: KOP 6 Highway 50
3. VRM Class: Unclassified
4. Location: Township 20N; Range 39E; Section 28
5. Location Sketch: See attached map

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LANDWATER	2. VEGETATION	3. STRUCTURES
FORM	Predominately smooth, uniform in fore and mid-ground, contrasting, rugged, course and discontinuous in background	Indistinct, simple, smooth, low, rounded shrubs and forbes	Weak, contrasting linear feature from utility poles a
LINE	Horizontal, linear unbroken line at valley floor/toe of slope, irregular, continuous horizon line along ridge top. Diagonal/angular lines background.	Continuous, repetitive, simple in fore and mid ground, indistinct in background	Weak, vertical and repetitive from utility poles.
COLOR	Predominately light tans to yellows from alluvial topsoils to dark browns and grays from exposed rock in background range	Monotonous, dull yellows, sporadic grays, and greens	Browns utility poles.
TEXTURE	Fore/midground smooth and uniform, non-contrasting. Background contrasting, discontinuous, undulating	Stippled, scattered, continuous, and uniform.	Bold and blocky.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LANDWATER	2. VEGETATION	3. STRUCTURES
FORM	Predominately smooth, uniform in fore and mid-ground. Distinct, narrow, contrasting, symmetrical in project area	Removed in project area, no changes undisturbed areas.	Prominent, bold, blocky, symmetrical and linear
LINE	Contoured, straight, simple for construction area, no changes for undisturbed areas.	Removed in project area, no changes in undisturbed areas.	Geometric, parallel, hard, angular
COLOR	In construction area, exposed mineral soils tan to brown, whites to grays. No change to undisturbed areas	Removed in project area, no changes in undisturbed areas.	Greens, grays, browns, and tans
TEXTURE	Smooth, uniform, matte	Removed in project area, no changes in undisturbed areas.	Generation plant bold, blocky, and matte. PV modules flat, smooth, uniform, continuous, and glossy.

SECTION D. CONTRAST RATING ☐ SHORT TERM ☒ LONG TERM

1. DEGREE OF CONSTRAST

ELEMENTS	FEATURES: LANDWATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
Form			X		X						X	
Line			X		X						X	
Color		X			X						X	
Texture		X			X						X	

2. Does project design meet visual resource management objectives? ☒ Yes ☐ No (Explain on reverse side)

3. Additional mitigating measures recommended? ☒ Yes ☐ No (Explain on reverse side)

Evaluator's Names	Date
Harold Brewer	9/2/15
Tyrell Milliron	9/2/15

Comments from item 2.

KOP 6 is located approximately 8.1 miles southeast of the main project site and provides the first view of the generation plant for vehicles traveling west on Hwy 50. The observation angle is level with the project area allowing for a view of the the generation plant to the northwest. From this location the viewer would see the generation plant and the PV modules along the right (northwest) side of the road and the natural landscape of the open valley floor. There are no similar preexisting disturbances on the landscape, so changes to the landscape would be strong. Changes to the landscape form and line would be weak since little surface disturbance is required for project development in the vicinity of KOP 6. Changes to the landscape form and line nearer to the generation plant would be also be weak due to the distance, and they are below the skyline. Alterations to the vegetation would be strong within the project area since it will be removed, but the predominant vegetation is low growing sage brush scrub so visual impacts would be low since vegetation outside of the project area will not be disturbed. The greatest impacts to the viewshed will come from the generation plant and PV modules. These objects would provide a weak contrast to natural line and form of the landscape. Although the project will introduce a moderate or weak contrast to the form, line, color and texture of the land from this location, the change is considered acceptable for this area with the proposed interim VRM Class III designation.

Additional Mitigating Measures (See item 3)

Project mitigation measures addressing paint colors for structures, site lighting, reclamation of disturbed areas, and reflectivity of distribution poles will be addressed in the EA. Please refer to Environmental Consequences section for specific mitigation recommendations.

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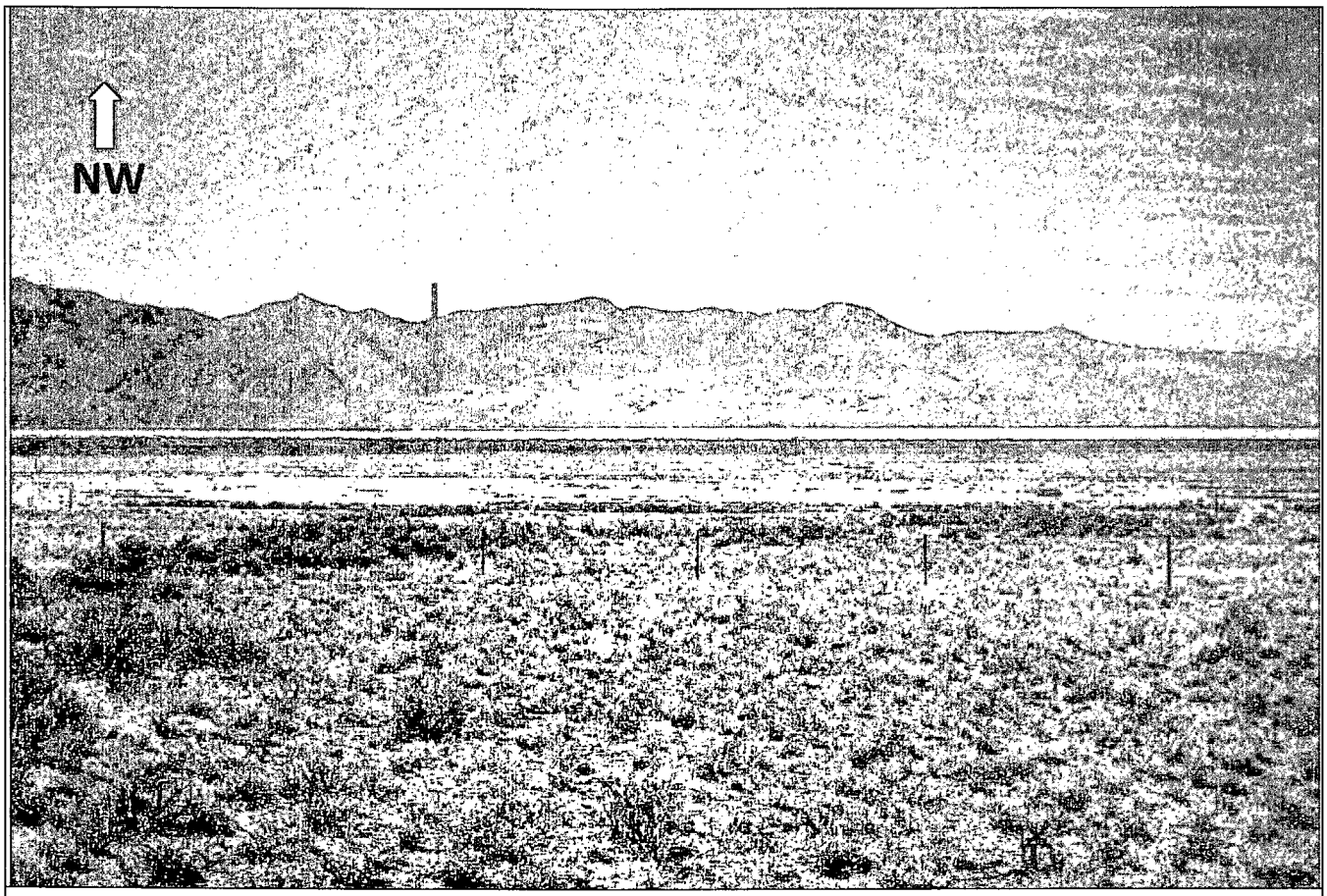


KOP 6 shows the location of the proposed generation plant below red arrow. Travelers heading west on Highway 50 from Austin will get their first view of the project area on the toe of the distant mountains. From KOP 6 the viewshed can be divided into three distinct boundaries; the foreground, midground and the background. The foreground consists of open, relatively smooth, flat, slightly concave alluvial fan sloping north to the dry lake bed. Vegetation is composed primarily of indistinct salt desert scrub and grasses which are low, uneven, and transitional with predominate colors of yellow, and light tans or browns and occassional dark green. The midground consists of a smooth flat continuous dry lake bed surface with little to no vegetation cover. The predominant color is light tan. The background consists of rugged terrain comprised of tall ridges and canyons and pyramidal, angular shapes that provide dark and light contrasts from shadows. Predominant colors are dark browns, grays and blues. The predominant vegetation is under three feet in height and will not provide screening of the project. The horizon line will be above the tallest of the structures, thereby reducing contrasting impacts to the landscape lines and form since facitlities will not protrude above the skyline. The project will be extending existing visual disturbances further to the south from this viewpoint. However, non-natural features to line and form already exist from the existing fenceline.

Project: Ormat Tungsten Mountain	**Date:** 9/2/15
Evaluators: Harold Brewer and Tyrell Milliron	**Photo ID**: 1919
Location ID: KOP 6	**Lens Focal Length**: 50 mm
Azimuth: 316^{0} NW	**Waypoint ID**:
UTM East: 449019	**UTM North:** 4380953

Form 8400-4
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: 9/2/15
District: Carson City
Resource Area: Stillwater Field Office
Activity (program): Visual Resources

SECTION A. PROJECT INFORMATION

1. Project Name: Ormat Tungsten Mountain
2. Key Observation Point: KOP 7 Highway 50
3. VRM Class: Unclassified
4. Location: Township 19N; Range 37E; Section 27
5. Location Sketch: See attached map

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LANDWATER	2. VEGETATION	3. STRUCTURES
FORM	Predominately smooth, uniform in fore and mid-ground, contrasting, rugged, course and discontinuous in background	Indistinct, simple, smooth, low, rounded shrubs and forbes	Prominent, contrasting linear feature from utility poles and barbed wire fence
LINE	Horizontal, linear unbroken line at valley floor/toe of slope, irregular, continuous horizon line along ridge top. Diagonal/angular lines background.	Continuous, repetitive, simple in fore and mid ground, indistinct in background	Prominent, vertical and repetitive from utility poles
COLOR	Predominately light tans to yellows from alluvial topsoils to dark browns and grays from exposed rock in background range	Monotonous, dull yellows and sporadic grays, and greens	Dark brown utility poles.
TEXTURE	Fore/midground smooth and uniform, non-contrasting. Background contrasting, discontinuous, undulating	Stippled, scattered and continuous, uniform	Smooth and ordered

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LANDWATER	2. VEGETATION	3. STRUCTURES
FORM	Predominately smooth, uniform in fore and mid-ground. Distinct, narrow, contrasting, symmetrical in project area	Removed in project area, no changes undisturbed areas.	Prominent, symmetrical and linear
LINE	Contoured, straight, simple for construction area, no changes for undisturbed areas.	Removed in project area, no changes in undisturbed areas.	Geometric, parallel, hard, angular
COLOR	In construction area, exposed mineral soils tan to brown, whites to grays. No change to undisturbed areas	Removed in project area, no changes in undisturbed areas.	Browns
TEXTURE	Smooth, uniform, matte	Removed in project area, no changes in undisturbed areas.	Power Line Poles and fence uniform, continuous,matte

SECTION D. CONTRAST RATING ☐ SHORT TERM ☒ LONG TERM

1. DEGREE OF CONSTRAST

ELEMENTS	FEATURES: LANDWATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
Form		X				X				X		
Line		X				X				X		
Color		X				X					X	
Texture		X				X					X	

2. Does project design meet visual resource management objectives? ☒ Yes ☐ No (Explain on reverse side)

3. Additional mitigating measures recommended? ☐ Yes ☒ No (Explain on reverse side)

Evaluator's Names	Date
Harold Brewer	9/2/15
Tyrell Milliron	9/2/15

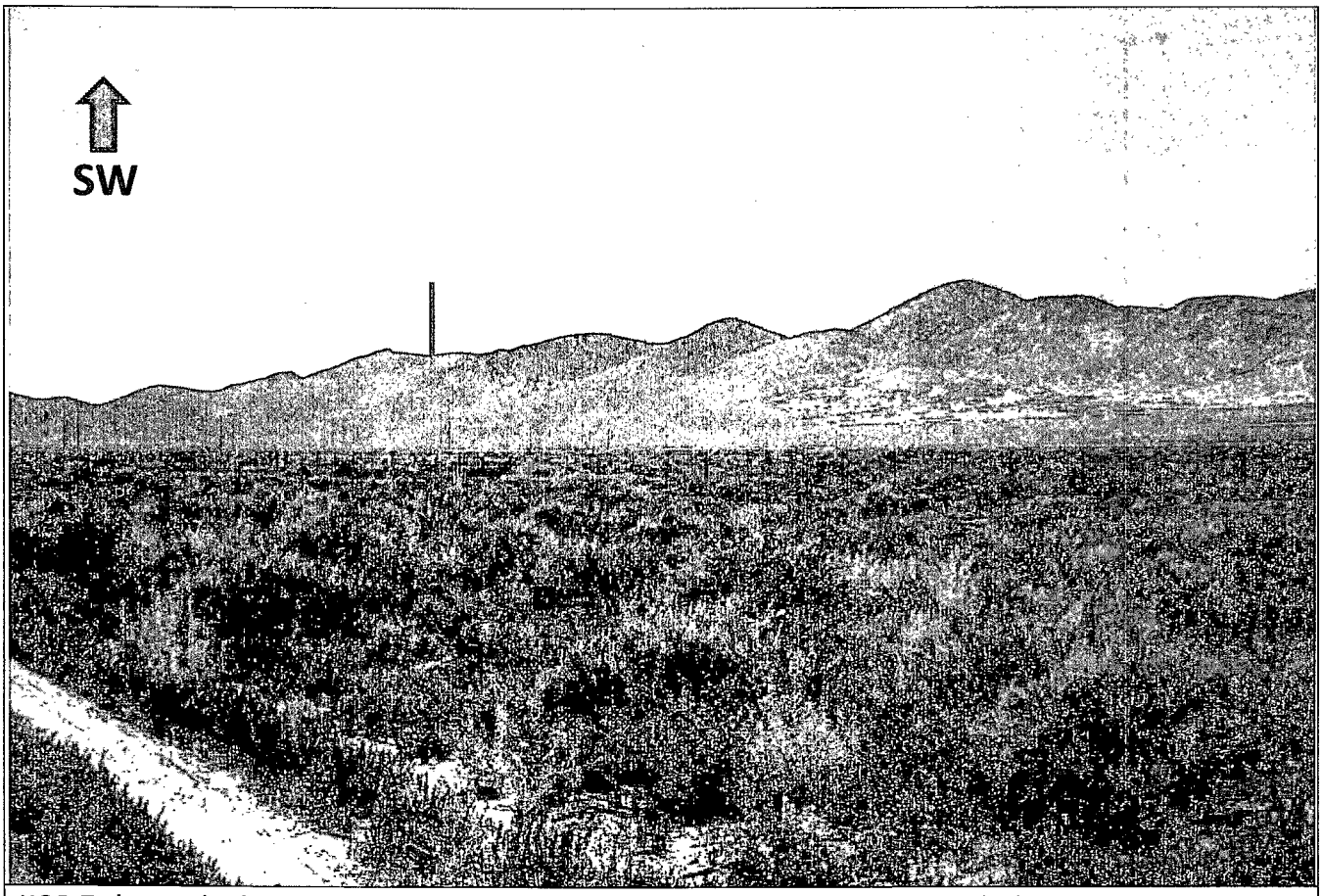
Comments from item 2.

KOP 7 is located approximately 8.1 miles southeast of the main project site and provides the first view of the new transmission line where it connects with the existing power line for vehicles traveling west on Hwy 50. The observation angle is level with the project area allowing for a view of the the transmission lines to the northwest. From this location the viewer would see the generation plant and the PV modules along the right (southwest) side of the road and the natural landscape of the open valley floor. There are similar preexisting disturbances on the landscape, so changes to the landscape would be weak. Changes to the landscape form and line would be weak due to existing similar disturbances and since little surface disturbance is required for project development in the vicinity of KOP 7. Changes to the landscape form and line nearer to the generation plant would be also be weak as they are below the skyline. Alterations to the vegetation would be strong within the project area since it will be removed, but the predominant vegetation is low growing sage brush scrub so visual impacts would be low since vegetation outside of the project area will not be disturbed. These objects would provide a weak contrast to natural line and form of the landscape. Although the project will introduce a moderate or weak contrast to the form, line, color and texture of the land from this location, the change is considered acceptable for this area with the proposed interim VRM Class III designation.

Additional Mitigating Measures (See item 3)

None. Please refer to Environmental Consequences section for specific mitigation recommendations.

U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094



KOP 7 shows the location of the proposed transmission line connection with the existing transmission line below the red arrow. This is the view to travelers heading southwest on Highway 50 to the left of the photo. The new transmission line will run in a north direction from the existing line, running to Alpine Road to the right of this photo. From KOP 7 the viewshed can be divided into two distinct boundaries; the fore/mid ground and the background. The foreground and midground consists of open, relatively smooth, flat, slightly concave valley floor sloping south. Vegetation is composed primarily of indistinct sage brush scrub which is low, uniform, and continuous with predominate colors of yellow, grays, light tans or browns and occassional green. The background consists of rugged terrain comprised of small ridges and canyons and pyramidal, angular shapes that provide dark and light contrasts from shadows. Predominant colors are dark browns and grays. From this observation point, the casual observer will be exposed to the closest view of the project from Highway 50 and slightly elevated as the highway runs along the toe of a slope. The predominant vegetation is under three feet in height and will not provide screening of the project. The horizon line will be broken and discontiguous, thereby reducing contrasting impacts to the landscape lines and form since power lines will not protrude above the skyline. The project will be extending existing visual disturbances further to the north and east from this viewpoint. However, non-natural features to line and form already exist from the utility lines, poles, fences and exposed natural soil from a dirt two-track road on the northwest side of the highway.

Project: Ormat Tungsten Mountain	**Date:** 9/2/15
Evaluators: Harold Brewer and Tyrell Milliron	**Photo ID**: 1921
Location ID: KOP 7	**Lens Focal Length**: 50 mm
Azimuth: 212^{0} SW	**Waypoint ID**:
UTM East: 430423	**UTM North:** 4370520

EXHIBIT 7 – Appendices C

Appendix C
Tungsten Mountain Geothermal Development Project
Environmental Assessment

Required Design Features

The Carson City District Consolidated Resource Management Plan (CRMP) has been amended by the Nevada and Northeastern California Greater Sage-Grouse Approved Resource Management Plan Amendment (USDI, BLM 2015b). The Record of Decision (ROD, and hereafter referred to as the Decision) for this planning effort was signed on September 21, 2015. Appendix C of this Decision states that Required Design Features (RDFs) are required for certain activities in all Greater sage-grouse (GRSG) habitat. RDFs establish the minimum specifications for certain activities to help mitigate adverse impacts. However, the applicability and overall effectiveness of each RDF cannot be fully assessed until the project level when the project location and design are known. Because of site-specific circumstances, some RDFs may not apply to some projects (e.g., a resource is not present on a given site) and/or may require slight variations (e.g., a larger or smaller protective area). All variations in RDFs would require that at least one of the following be demonstrated in the NEPA analysis associated with the project/activity:

- A specific RDF is documented to not be applicable to the site-specific conditions of the project/activity (e.g. due to site limitations or engineering considerations). Economic considerations, such as increased costs, do not necessarily require that an RDF be varied or rendered inapplicable;
- An alternative RDF is determined to provide equal or better protection for GRSG or its habitat;
- A specific RDF will provide no additional protection to GRSG or its habitat."

The following Table identifies the RDFs that apply to all projects within Priority Habitat Management Areas (PHMA), General Habitat Management Areas (GHMA) and Other Habitat Management Areas (OHMA) consistent with applicable laws as identified in Appendix C of the GRSG Decision and states whether this RDF is applicable to this proposed project. If a RDF is not applicable to this proposed project, or requires a variation, the rationale for this is also stated in the table below.

Table 1: Required Design Features and Project Applicability

Required Design Feature	Applicable to Project	Rationale If Not Applied to Project
General RDFs		
RDF Gen 1: Locate new roads outside of GRSG habitat to the extent practical.	Yes	
RDF Gen 2: Avoid constructing roads within riparian areas and ephemeral drainages. Construct low-water crossings at right angles to ephemeral drainages and stream crossings (note that such construction may require permitting under Sections 401 and 404 of the Clean Water Act).	Yes	

Required Design Feature	Applicable to Project	Rationale If Not Applied to Project
RDF Gen 3: Limit construction of new roads where roads are already in existence and could be used or upgraded to meet the needs of the project or operation. Design roads to an appropriate standard, no higher than necessary, to accommodate intended purpose and level of use.	Yes	
RDF Gen 4: Coordinate road construction and use with ROW holders to minimize disturbance to the extent possible.	Yes	
RDF Gen 5: During project construction and operation, establish and post speed limits in GRSG habitat to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.	Yes	
RDF Gen 6: Newly constructed project roads that access valid existing rights would not be managed as public access roads. Proponents will restrict access by employing traffic control devices such as signage, gates, and fencing.	Yes	
RDF Gen 7: Require dust abatement practices when authorizing use on roads.	Yes	
RDF Gen 9: Upon project completion, reclaim roads developed for project access on public lands unless, based on site-specific analysis, the route provides specific benefits for public access and does not contribute to resource conflicts.	Yes	
RDF Gen 10: Design or site permanent structures that create movement (e.g., pump jack/ windmill) to minimize impacts on GRSG habitat.	Yes	
RDF Gen 11: Equip temporary and permanent aboveground facilities with structures or devices that discourage nesting and perching of raptors, corvids, and other predators.	Yes	
RDF Gen 12: Control the spread and effects of nonnative, invasive plant species (e.g., by washing vehicles and equipment, minimize unnecessary surface disturbance; Evangelista et al. 2011). All projects would be required to have a noxious weed management plan in place prior to construction and operations.	Yes	
RDF Gen 13: Implement project site-cleaning practices to preclude the accumulation of debris, solid waste, putrescible wastes, and other potential anthropogenic subsidies for predators of	Yes	

Required Design Feature	Applicable to Project	Rationale If Not Applied to Project
GRSG.		
RDF Gen 14: Locate project related temporary housing sites outside of GRSG habitat.	No	Not applicable because no temporary housing for this project is proposed.
RDF Gen 15: When interim reclamation is required, irrigate site to establish seedlings more quickly if the site requires it.	Yes	
RDF Gen 16: Utilize mulching techniques to expedite reclamation and to protect soils if the site requires it.	Yes	
RDF Gen 17: Restore disturbed areas at final reclamation to the pre-disturbance landforms and desired plant community.	Yes	
RDF Gen 18: When authorizing ground-disturbing activities, require the use of vegetation and soil reclamation standards suitable for the site type prior to construction.	Yes	
RDF Gen 19: Instruct all construction employees to avoid harassment and disturbance of wildlife, especially during the GRSG breeding (e.g., courtship and nesting) season. In addition, pets shall not be permitted on site during construction (BLM 2005b).	Yes	
RDF Gen 20: To reduce predator perching in GRSG habitat, limit the construction of vertical facilities and fences to the minimum number and amount needed and install anti-perch devices where applicable.	Yes	
RDF Gen 21: Outfit all reservoirs, pits, tanks, troughs or similar features with appropriate type and number of wildlife escape ramps (BLM 1990; Taylor and Tuttle 2007).	Yes	
RDF Gen 22: Load and unload all equipment on existing roads to minimize disturbance to vegetation and soil.	Yes	
Lands and Realty RDFs		
RDF LR-LUA 1: Where new ROWs associated with valid existing rights are required, co-locate new ROWs within existing ROWs or where it best minimizes impacts in GRSG habitat. Use existing roads or realignments of existing roads to access valid existing rights that are not yet developed.	Yes	
RDF LR-LUA 2: Do not issue ROWs to counties on newly constructed energy/mining	No	Not applicable because ORMAT is not a county.

Required Design Feature	Applicable to Project	Rationale If Not Applied to Project
development roads, unless for a temporary use consistent with all other terms and conditions included in this document.		
RDF GEN 3: Where necessary, fit transmission towers with anti-perch devices (Lammers and Collopy 2007) in GRSG habitat.	Yes	
Fuels and Fire Management RDFs		
RDF WFM 1: Power-wash all firefighting vehicles, including engines, water tenders, personnel vehicles, and all-terrain vehicles (ATVs), prior to deploying in or near GRSG habitat to minimize the introduction and spread of undesirable and invasive plant species	Yes	
RDF WFM 2: Protect wildland areas from wildfire originating on private lands, infrastructure corridors, and recreational areas.	Yes	
RDF WFM 3: Reduce the risk of vehicle or human-caused wildfires and the spread of invasive species by planting perennial vegetation (e.g., green-strips) paralleling road rights-of-way.	Yes	
Fluid Minerals RDFs		
RDF Lease FM 1: Co-locate power lines, flow lines, and small pipelines under or immediately adjacent to existing roads (Bui et al. 2010) in order to minimize or avoid disturbance.	No	Not applicable based on engineering considerations – while pipelines will follow existing roads to the extent possible in order to deliver geothermal fluids to power plant some pipeline sections will take the shortest route. All pipelines will be above ground except at road crossings.
RDF Lease FM 2: Cover, create barriers, or implement other effective deterrents (e.g., netting, fencing, birdballs, and sound cannons) for all ponds and tanks containing potentially toxic materials to reduce GRSG mortality.	Yes	
RDF Lease FM 3: Require installation of noise shields to comply with noise restrictions (see Action SSS 7) when drilling during the breeding, nesting, brood-rearing, and/or wintering season. Require applicable GRSG seasonal timing restrictions when noise restrictions cannot be met (see Action SSS 6).	Yes	
RDF Lease FM 4: Ensure habitat restoration meets GRSG habitat objectives (Table 2-2) for reclamation and restoration practices/sites (Pyke	Yes	

Required Design Feature	Applicable to Project	Rationale If Not Applied to Project
2011).		
RDF Lease FM 5: Maximize the area of interim reclamation on long-term access roads and well pads, including reshaping, topsoil management, and revegetating cut-and-fill slopes.	Yes	
RDF Lease FM 6: Restore disturbed areas at final reclamation to the pre-disturbance landforms and meets the GRSG habitat objectives (Table 2-2).	Yes	
RDF Lease FM 7: Use only closed-loop systems for drilling operations and no reserve pits within GRSG habitat.	No	Not applicable based on engineering considerations – a closed-loop system is not sufficient for the size and depth of the geothermal wells needed for the project.
RDF Lease FM 8: Place liquid gathering facilities outside of GRSG habitat. Have no tanks at well locations within GRSG habitat to minimize vehicle traffic and perching and nesting sites for aerial predators of GRSG.	No	Not applicable because there are no liquid gathering facilities for transferring fluids to trucks for offsite disposal proposed for this project.
RDF Lease FM 9: In GRSG habitat, use remote monitoring techniques for production facilities and develop a plan to reduce vehicular traffic frequency of vehicle use (Lyon and Anderson 2003).	Yes	
RDF Lease FM 10: Use dust abatement practices on well pads.	Yes	
RDF Lease FM 11: Cluster disturbances associated with operations and facilities as close as possible, unless site-specific conditions indicate that disturbances to GRSG habitat would be reduced if operations and facilities locations would best fit a unique special arrangement.	Yes	
RDF Lease FM 12: Apply a phased development approach with concurrent reclamation	Yes	
RDF Lease FM 13: Restrict pit and impoundment construction to reduce or eliminate augmenting threats from West Nile virus (Dougherty 2007).	Yes	
RDF Lease FM 14: In GRSG habitat, remove or re-inject produced water to reduce habitat for mosquitoes that vector West Nile virus. If surface disposal of produced water continues, use the following steps for reservoir design to limit	Yes	

Required Design Feature	Applicable to Project	Rationale If Not Applied to Project
favorable mosquito habitat (Doherty 2007): • Overbuild size of ponds for muddy and non-vegetated shorelines. • Build steep shorelines to decrease vegetation and increase wave actions. • Avoid flooding terrestrial vegetation in flat terrain or low lying areas. • Construct dams or impoundments that restrict down slope seepage or overflow. • Line the channel where discharge water flows into the pond with crushed rock. • Construct spillway with steep sides and line it with crushed rock. • Treat waters with larvicides to reduce mosquito production where water occurs on the surface.		
RDF Lease FM 15: Consider using oak (or other material) mats for drilling activities to reduce vegetation disturbance and for roads between closely spaced wells to reduce soil compaction and maintain soil structure to increase likelihood of vegetation reestablishment following drilling.	Yes	
Locatable Minerals		
RDF LOC 1: Install noise shields to comply with noise restrictions (see Action SSS 7) when drilling during the breeding, nesting, brood-rearing, and/or wintering season. Apply GRSG seasonal timing restrictions when noise restrictions cannot be met (see Action SSS 6).	No	This is not a locatable minerals project.
RDF LOC 2: Cluster disturbances associated with operations and facilities as close as possible, unless site-specific conditions indicate that disturbances to GRSG habitat would be reduced if operations and facilities locations would best fit a unique special arrangement.	No	This is not a locatable minerals project.
RDF LOC 3: Restrict pit and impoundment construction to reduce or eliminate augmenting threats from West Nile virus (Dougherty 2007).	No	This is not a locatable minerals project.
RDF LOC 4: Remove or re-inject produced water to reduce habitat for mosquitoes that vector West Nile virus. If surface disposal of produced water continues, use the following steps for reservoir design to limit favorable mosquito habitat (Doherty 2007):	No	This is not a locatable minerals project.

Required Design Feature	Applicable to Project	Rationale If Not Applied to Project
• Overbuild size of ponds for muddy and non-vegetated shorelines. • Build steep shorelines to decrease vegetation and increase wave actions. • Avoid flooding terrestrial vegetation in flat terrain or low lying areas. • Construct dams or impoundments that restrict down slope seepage or overflow. • Line the channel where discharge water flows into the pond with crushed rock. • Construct spillway with steep sides and line it with crushed rock. • Treat waters with larvicides to reduce mosquito production where water occurs on the surface.		
RDF LOC 5: Address post reclamation management in reclamation plan such that goals and objectives are to protect and improve sage-grouse habitat needs.	No	This is not a locatable minerals project.
RDF LOC 6: Maximize the area of interim reclamation on long-term access roads and well pads including reshaping, topsoiling and revegetating cut and fill slopes.	No	This is not a locatable minerals project.
RDF LOC 7: Cover (e.g., fine mesh netting or use other effective techniques) all pits and tanks regardless of size to reduce sage-grouse mortality.	No	This is not a locatable minerals project.
Comprehensive Travel and Transportation Management		
RDF CTTM 1: Rehabilitate roads, primitive roads, and trails not designated in approved travel management plans.	No	This is not a travel management project.
RDF CTTM 2: Reclaim closed duplicate roads by restoring original landform and establishing desired vegetation in GRSG habitat in accordance with GRSG habitat objectives (Table 2-2) as identified in travel management planning.	No	This is not a travel management project.

EXHIBIT 7 – Appendices E

Appendix E: Responses to Comments

Comments were accepted on the *Tungsten Mountain Geothermal Development Project* Environmental Assessment (EA), DOI-BLM-NV-C010-2016-0016-EA, for a 30 day period from December 22, 2015 through January 21, 2016; although comments received in a timely manner after this date were also considered.

Letters to 4 individuals, organizations and agencies were mailed on December 22, 2015. Emails were also sent that day to 5 individuals, organizations and agencies. Notification of the availability of the EA to 95 additional State and Federal offices was made through the Nevada State Clearinghouse on December 22, 2015. The Carson City District (CCD) published a news release on that day as well that was sent to media outlets listed on the Nevada BLM State Office media list.

Coordination with the Fallon Paiute-Shoshone Tribe was initiated in 2011 during the proposal for geothermal exploration activities in the Tungsten Mountain Project Area and with the current proposal in 2015. Face-to-face consultation meetings took place in April 2011, March 2015, April 2015, June 2015, September 2015 and November 2015. Site visits to the project location were also conducted in 2011 and 2015 with the Fallon Paiute-Shoshone Tribe's Cultural Committee Coordinators and the Cultural Committee Chair. Consultation with the tribe is ongoing but to date no traditional cultural properties or sacred sites have been identified within the Project Area. Ongoing consultation could result in new information and additional mitigation measures.

Although not required for an EA by regulation, an agency may respond to substantive and timely comments. Substantive comments: 1) question, with reasonable basis, the accuracy of information in the EIS or EA; 2) question, with reasonable basis, the adequacy of, methodology for, or assumptions used for the environmental analysis; 3) present new information relevant to the analysis; 4) present reasonable alternatives other that those analyzed in the Environmental Impact Statement (EIS) or EA; and/or 4) cause changes or revisions in one or more of the alternatives. No response is necessary for non-substantive comments (BLM, 2008). All comments were reviewed, considered, and then categorized into topics when feasible. Distinct topics and comments are summarized in Table 1.

Comment letters were received from 8 Federal and State government agencies by email. The Federal Government Agencies were the US Environmental Protection Agency (USEPA) and the Navy (Naval Air Station Fallon). State agencies that commented were the Nevada State Land Use Planning Agency, the Nevada State Historic Preservation Office (SHPO), the Nevada Division of Water Resources, the Nevada Department of Wildlife, the Nevada Division of Environmental Protection (NDEP) - Bureau of Safe Drinking Water and the NDEP - Bureau of Air Pollution Control. Changes that were made to the EA as a result of the comment submissions are noted in the response table below.

Table 1: Response to Comments Received on the *Tungsten Mountain Geothermal Development Project* EA

#	Commenter	Comment	BLM Response
1	Nevada State Land Use Planning Agency	Please consider the cumulative visual impacts from development activities **(temporary and permanent),** including proliferation of improper lighting. The following mitigation measures should be required: **<u>Utilize appropriate lighting:</u>** • Utilize consistent lighting mitigation measures that follow "Dark Sky" lighting practices, • Effective lighting should have screens that do not allow the bulb to shine up or out. All proposed lighting shall be located to avoid light pollution onto any adjacent lands as viewed from a distance. All lighting fixtures shall be hooded and shielded, face downward, located within soffits and directed on to the pertinent site only, and away from adjacent parcels or areas. • A lighting plan should be submitted indicating the types of lighting and fixtures, the locations of fixtures, lumens of lighting, and the areas illuminated by the lighting plan, • Any required FAA lighting should be consolidated and minimized whenever possible.	Mitigation measures regarding facility lighting can be found in Section 3.4.12 (Visual Resources) of the Environmental Assessment (EA).
2	Naval Air Station Fallon, Nevada and Naval Aviation Warfare Development Command (Navy)	The airspace above the project site consists of Restricted Area R-4816N with a floor of 1500 feet, R-4816S with a floor of 500ft and Fallon South 1 and Fallon North 2 Military Operating Areas with a floor of 100ft. Low altitude training aircraft can be expected during both day and night time.	Comment noted.
3	Navy	The Gen-Tie Line (section 2.1.4) presents a potential obstacle to low altitude aircraft. While the proposed action states that structure heights "would be either approximately 55 to 70 feet if a wooden or steel monopole were utilized, or approximately 80 feet", the Navy requests transmission lines in no case be higher than 100 feet in order to maintain adequate	Ormat's preferred option is to utilize steel monopoles with heights from 80'-110' tall. There is an existing transmission line in the area that the Tungsten project would tie into that has poles over 100' tall..

#	Commenter	Comment	BLM Response
		separation from low altitude aircraft.	
4	Navy	-Mitigation measures stated for Visual Resources (para 3.4.12.2.1) address some nighttime lighting effects. Additional light mitigations measures are desired for Night Vision Device (NVD) aircraft operations. NVDs operate by amplifying any additional light sources within their designed wavelength spectrum. The Navy desires minimal lighting to maintain dark skies, both during construction and final operating states; and further requests any lighting be downturned and limiting dispersal, with additional NVD compatible (<625 nanometers) filters/covers. Intelligence collection training by other national assets requires minimal lighting in this region to the max extent possible. The exception for lighting mitigation would be during construction to maintain adequate obstruction lighting to any construction equipment or drilling rigs that project above 40 FT.	Refer to comment response #1.
5	Navy	As stated in Section 3.4.14 Land Use Authorizations and Table 3.18, the Navy maintains rights-of-way for five mobile threat emitter (Electronic Warfare) sites in the vicinity of the proposed action and additionally utilizes the road adjacent to the project site regularly. The Navy requests continued unrestricted access to these rights-of-ways as well as unobstructed line-of-sight between associated microwave antennae. If there will be anticipated obstruction of the sites, direct coordination of dates and times is requested.	There is only one mobile threat emitter ROW adjacent to Alpine road within the project area. Ormat will be provided with a location map to ensure construction and long term operation activities or facilities do not interfere with the navy ROW
6	Navy	-Frequency Spectrum utilization in this area remains an issue as the Navy performs extensive Electronic Warfare training. The expected remote instrumentation and telecommunications equipment as part of the geothermal operation could conflict with Navy operations. ORMAT can expect intermittent loss of radio communications and/or GPS location data from Navy training. The Navy prefers use of fiber-optic lines, as proposed in para 2.1.4.1, while avoiding use of any microwave communications. Mitigations	Wireless operation of project facilities using microwave communications equipment is the only option currently proposed by Ormat. Ormat is currently in contact with the Navy to resolve the potential issues arising from the new facilities. The FCC regulates wireless communications signals and would have jurisdiction if Ormat and the Navy cannot come to an agreement. Wire or fiber communications lines may be necessary if the proposed wireless equipment is not compatible with the

#	Commenter	Comment	BLM Response
		available in the case of radio frequency spectrum use by the proponent would be use of dual-band frequencies as well as close coordination with the Navy frequency spectrum manager.	existing Navy operations.
7	Nevada Division of Environmental Protection (NDEP) - Bureau of Air Pollution Control	Our regulations have a provision to prevent fugitive dust from becoming airborne. Additionally, if the area disturbance will be greater than 5 acres, a permit is required.	Prior to construction and surface disturbance, Ormat will acquire all necessary permits from NDEP. Also refer to Section 3.4.1.2.1 of the EA.
8	NDEP – Bureau of Air Pollution Control	Additionally, depending on the need/use of a motive fluid in the geothermal process; the facility may be subject to the Chemical Accident Prevention Program.	Refer to Comment Response #7. Ormat will acquire a Chemical Accident Prevention Program Permit to operate as well as a Class II Air Quality Operating Permit from NDEP.
9	NDEP – Bureau of Air Pollution Control	Ormat already holds several permits both for Air Quality and the Chemical Accident Prevention Program for other facilities. The project below will also most likely need a Class II Air Quality Operating Permit for any stationary sources they construct.	Refer to Comment Responses #7 and 8.
10	NDEP – Bureau of Safe Drinking Water	Please be aware that if the proposed Tungsten Mountain Geothermal Development Project will have 15 on more service connections or serve 25 or more people at least 60 days out of a year, the facility will need to become permitted as a public drinking water system. Providing bottle water to the workforce does not relieve a facility of the requirement of becoming permitted as a public drinking water system.	Ormat does not propose any service connections or serving of drinking water for this Project.
11	Nevada Department of Wildlife (NDOW)	Ensure public access remains available on existing roads (e.g. Stone Canyon).	Existing access routes to Augusta, Stone and Smooth Canyons will remain open to public travel. If placement of wells, well pads, pipelines or fencing will affect access on these routes, Ormat will work with the BLM to provide alternative access routes. Additonal text has been added to the EA Supplemental Authority table.
12	NDOW	All potentially harmful liquid should be fenced to preclude access by terrestrial animals. In areas with small terrestrial mammals such as the Tungsten area, utilize fencing with holes smaller than 2 inches (e.g. stucco/chicken wire, safety, etc) is recommended for the bottom two feet while being placed tight to the ground.	Refer to the Environmental Assessment's (EA) Section 2.1.1.1 and Section 2.1.11 Adopted Protection Measures. Reserve pits would be constructed in accordance with Best Management Practices (BMPs) identified in the "Surface Operating Standards and Guidelines for Oil and

#	Commenter	Comment	BLM Response
		Fences should be placed away from sump edge allowing greater than6 feet of level surface so wildlife can adequately maneuver over/under/ through fences if the sump is accessed. Fences should be inspected and maintained to preclude wildlife access.	Gas Exploration and Development (The Gold Book)" (Fourth Edition – Revised 2007).
13	NDOW	We recommend using conductor covers and appropriate line spacing as the method for preventing raptor electrocutions. Conductor covers should be used in areas where anti-perch and anti-nesting devices are installed.	Refer to Section 2.1.11 Adopted Protection Measures and Section 3.4.7.2.1 in the EA. Raptor protection would be in compliance with the standards described in the "Suggested Practices for Raptor Protection on Power Lines, The State of the Art in 2006" (APLIC 2006) and "Reducing Avian Collisions with Power Lines" (APLIC 2012).
14	NDOW	We discourage the use of lattice transmission structures to minimize raptor and corvid perching and nesting.	No lattice transmission structures would be used. Ormat is proposing the use of steel monopoles for this project.
15	NDOW	Avoidance dates for construction in close proximity to mine hazards including bat compatible closures is as follows: May 15 - July 30 maternity/summer; November 1 – March 30 for hibernation.	A BBCS has been prepared for this project to address these concerns, refer to Appendix D of the EA.
16	NDOW	During drilling of wells (24 hours) it is recommended to minimize lighting at night when reserve pits are holding water. Lights will attract more bats foraging for the insects drawn to lights and therefore placing them in a situation where they will also be drinking from thermal water, which is potentially harmful.	Refer to comment response #1. Only lighting absolutely necessary to operations would be used during drilling.
17	NDOW	Mitigate impacts to springs, pools, standing water in adits, etc. providing water to wildlife if geothermal production activities affect water resources.	Refer to Section 2.1.11 Adopted Protection Measures and the mitigation measures for Special Status Species and Water Quality.
18	Nevada Division of Water Resources	Proposal supported as written. All waters of the State belong to the public and may be appropriated for beneficial use pursuant to the provisions of Chapters 533 and 534 of the Nevada Revised Statutes (NRS), and not otherwise. Any water used on the described lands should be provided by an established utility or under permit issued by the State Engineer's Office. Any water, or monitor wells or boreholes located on the project lands are the	Comment Noted. The Project proposes an air-cooled facility that will not consume water for processing. Any water that is used for construction and dust abatement purposes would have a temporary use permit filed with the Nevada Division of Water Resources.

#	Commenter	Comment	BLM Response
		responsibility of the owner of the property and must be plugged and abandoned as required in Chapter 534 of the Nevada Administrative Code. Any water used on the described project for construction, dust control, maintenance, water fixtures (sinks, hose bibs, or toilets) should be provided by an established utility or under permit or waiver issued by the State Engineer's Office. Treated effluent is considered water as referred to in NRS Chapter 533, and is subjected to appropriation for beneficial use under procedures described in NRS Chapter 533, and specifically NRS § 533.440. If artesian water is located in any well or borehole it shall be controlled as required in NRS 534.060(3). Any person proposing to construct a dam, reconstruction or alteration of old structures in this state shall, before beginning construction, obtain from the State Engineer a permit to appropriate, store and use the water to be impounded by or diverted by the dam. If the proposed dam is or will be 20 feet or more in height, measured from the downstream toe to the crest of the dam, or is less than 20 feet in height and will impound more than 20 acre-feet of water, must submit to the State Engineer in triplicate plans and specifications thereof for his approval in accordance with Nevada Revised Statue Chapter 535 and Nevada Administrative Code Chapter 535 prior to construction is to begin.	
19	State Historic Preservation Office (SHPO)	As relates to cultural resources/historic preservation matters, the State Historic Preservation Office (SHPO) offers the following observations. The correct legal citation for the National Historic Preservation Act (NHPA), effective 1/6/15 is 54 U.S.C. §300101 et seq. (and Section 106 is located at 54 U.S.C. §306108).	The correct legal citation for NHPA and Sec. 106 of the NHPA has been updated in the EA .
20	SHPO	Section 2.1.11 addresses Adopted Protection Measures (APM), for which the	The referenced language in Section 2.1.11 is intended to summarize the

#	Commenter	Comment	BLM Response
		following measures are proposed for cultural resources: "Any areas containing cultural resources of significance would be avoided, or the potential for impacts mitigated in a manner acceptable to the BLM. Ormat employees, contractors, and suppliers would be reminded that all cultural resources are protected and if uncovered shall be left in place and reported to the Ormat representative and/or their supervisor" (p. 23) This is somewhat concerning to the SHPO as the Class III Inventory associated with this project, A Class III Inventory of the Ormat Tungsten Mountain Project, Churchill County, Nevada (CRR3-2685), was withdrawn from SHPO review and subsequently resubmitted as a below-threshold report. Thus, if impacts to cultural resources required "mitigation," it would appear that SHPO consultation under the authority of Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, was warranted as the project did indeed have the 2 potential to affect historic properties. Moreover, if resources will require "mitigation," then a Memorandum of Agreement will need to be negotiated and, by definition, the mitigation strategies and process outlined in the MOA will be "acceptable to" all consulting parties and not simply to the federal land manager.	procedure for addressing inadvertent impacts to known or unknown historic properties. Although historic properties may be identified within any project area and measures taken to avoid historic properties, there remains a possibility of accidental or inadvertent impact. The BLM has clarified the language to emphasize the description of procedure for inadvertent impacts to known or unknown historic properties. The section has been moved to 3.3.1.
21	SHPO	Section 3.4.2 identifies the literature review and Class III cultural resource inventory conducted on ca. 1,192 acres of the "Project Area" (not sure whether this means the direct APE) in Churchill County. As noted above, the Class III inventory was submitted to SHPO as a below-threshold report for integration into the Nevada Cultural Resources Information System (NVCRIS), but no SHPO concurrence on determinations of eligibility was sought. Instead, some of the discussion here notes such things as: "Therefore, Cardno ENTRIX concurs with the previous NRHP recommendations of not eligible for all three of these sites." The SHPO respectfully reminds the BLM that the cultural resources consultants make	The BLM intentionally referred to the 1,192 acres of cultural resource inventory as the "Project Area". The area of potential effect is defined as the area where project elements defined in Ormat's Plan of Utilization will be constructed. The BLM has clarified this distinction in the EA. Additionally the EA has been revised from stating "CardnoENTRIX concurs" to the correct statement that the "BLM has determined" in reference to eligibility in the EA. The BLM chose to not seek eligibility concurrence at this time in part because the historic properties will be avoided.

#	Commenter	Comment	BLM Response
		recommendations, but it is the federal land managers who make determinations of eligibility and findings of effect, with which the SHPO is regularly asked to concur. Thus, a statement that a consultant has "concurred" with a determination is a bit confusing and does not accurately reflect the Section 106 process.	
22	SHPO	Section 3.4.2.2.1 contains some language that could also be construed as pre-emptive mitigation--vs. site avoidance, which is what we imagine to be the BLM intent. This is additionally concerning when followed by a statement noting: "If these historic properties cannot be avoided, the BLM would consult to develop and evaluate alternatives or modifications to Ormat's undertaking" (p. 34). Given statements to the effect elsewhere in the document that the BLM consulted with Cardno ENTRIX on the project, it might make sense to specify with whom this consultation would occur. In addition, the SHPO reminds the BLM that such consultation would need to commence at ground level given that there has been no prior consultation on these resources.	The BLM has clarified the referenced language from this section in the EA.
23	SHPO	Section 4.3.1 discusses Cumulative Impacts of the Proposed Action, noting that: "Impacts to the integrity of setting of any subsequently identified National Register listed/eligible sites where integrity of setting is critical to their listing/eligibility could occur from the Proposed Action and the RFFA. Construction activities could increase the likelihood of vandalism of cultural sites" (p. 82). A subsequent statement suggesting that effects to cultural resources can be prevented by prosecuting offences under the Archaeological Resources Protection Act (ARPA) is logically inconsistent. After-the-fact prosecution does not prevent the vandalism that triggered the prosecution. Instead, it is only a potential deterrent to subsequent vandalism.	Due in part to the explanation given above (refer to previous comment response 21), the BLM has removed Section 4.3.1 from the EA.
24	SHPO	The use of the conditional mode (i.e., if) is somewhat less than reassuring in statements such as: "If all sites that are determined eligible for inclusion on the	Refer to comment response #23.

#	Commenter	Comment	BLM Response
		NRHP are avoided, and sites whose NRHP status is unevaluated are also avoided, then the project would have no effect to historic properties and the cumulative effect would be negligible" (p. 82). As this appears to be the very logic by which the undertaking was determined to be a below threshold undertaking--in other words because the action does not have the potential to affect historic properties--might it not make more sense to frame this in a more declarative fashion and explicitly state in the EA that this is why SHPO consultation was not necessary, per the BLM Protocol?	
25	SHPO	Table 6.1 List of Persons, Agencies and Organizations Consulted identifies the SHPO as the fifth of five groups or agencies consulted in the course of producing this EA, but then identifies no particular individual or program area--whereas all other entries in the table do. As the literature review and Class III inventory were withdrawn from review and the latter was subsequently resubmitted below-threshold, would it not have been more accurate to have omitted the SHPO from this list?	Table 6.1 has been adjusted to accurately reflect the consultation conducted with SHPO.
26	US Environmental Protection Agency (USEPA)	When the Final EA is released for public review, please send one hard copy and one electronic copy to the address above (mail code: ENF-4-2).	Comment Noted. The Final EA and associated documents will be transmitted both hard copy and electronic to EPA as requested.
27	USEPA	<u>Air Quality</u> *Recommendations:* *Quantify Emissions* - In the Final EA, estimate emissions of criteria pollutants from the proposed Project, including construction, testing, and operation activities, and discuss the timeframe[s] for release of these emissions over the lifespan of the Project. *Specify Emission Sources* - Specify, in the Final EA, the emission sources, by pollutant, from mobile sources, stationary sources, and ground disturbance. Use this source-specific information to identify appropriate mitigation measures and areas in need of the greatest attention.	Refer to comment responses #7 and 8. Appropriate permits will be acquired by Ormat prior to construction activities.
28	USEPA	<u>Emergency Planning, Risk Management, and Chemical Accident Prevention</u> *Recommendation:*	The project would comply with all applicable laws, statutes and regulations including the Clean Air

#	Commenter	Comment	BLM Response
		Discuss, in the Final EA, compliance with CAA §112(r), EPCRA §§ 303, 311, & 312 and the Nevada Chemical Accident Prevention Program, as applicable.	Act, the Emergency Planning and Community Right-to-Know Act (EPCRA) and Nevada Chemical Accident Prevention Program (refer to comment responses #7 &8). Also refer to Section 3.4.1 of the EA.
29	USEPA	Climate Change *Recommendations:* Estimate, in the Final EA, the GHG emissions associated with the proposal and its alternatives. Example tools for estimating and quantifying GHG emissions can be found on CEQ's NEPA.gov website. In addition, the Final EA should describe measures to reduce GHG emissions associated with the Project and disclose the estimated GHG reductions associated with such measures. Include, in the Final EA's "Affected Environment" section, a summary discussion of climate change and ongoing and reasonably foreseeable climate change impacts relevant to the Project, based on U.S. Global Change Research Program assessments, to assist with identification of potential project impacts that may be exacerbated by climate change and to inform consideration of practicable changes to the proposal to make it more resilient to anticipated climate change. Consider, in the Final EA, climate adaptation measures based on how future climate scenarios could affect the Project area, specifically within sensitive areas. [1] USG RP National Climate Assessment, May 2014, http://nca20 14.globalchange.gov/report	The proposed project is a renewable energy project that does not have any CO2 emissions. A Class II Air Quality operating permit will be obtained from NDEP prior to construction as well.

EXHIBIT 8

U.S. Department of the Interior
Bureau of Land Management

Finding of No Significant Impact

Tungsten Mountain Geothermal Development Project EA
#DOI-BLM-NV-C010–2016–0016–EA

March 2016

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Finding of No Significant Impact
Tungsten Mountain Geothermal Development
Project EA #DOI-BLM-NV-C010–2016–0016–EA

Prepared by
U.S. Department of the Interior
Bureau of Land Management
Carson City District, Stillwater Field Office

March 2016
Federal Geothermal Unit #NVN-88836X

1.1. Tungsten Mountain Geothermal Development Project

NEPA No. DOI-BLM-NV-C010–2016–0016–EA

I have reviewed the Tungsten Mountain Geothermal Development Project Environmental Assessment (EA) #DOI-BLM-NV-C010–2016–0016–EA dated January 2016. After consideration of the environmental effects as described in the EA, I have determined that the Proposed Action, with incorporation of special lease stipulations attached to leases NVN085715, NVN086897, NVN086898, NVN088428, and NVN090744, the Adopted Protection Measures (built into the Proposed Action, described in Chapter 2 of the EA), Required Design Features, Mitigation Measures identified in the EA (Chapters 3 and 4), and the Conditions of Approval attached to the permits, will not significantly affect the quality of the human environment and that an Environmental Impact Statement (EIS) is not required to be prepared.

I have determined that the Proposed Action is in conformance with the approved Carson City Field Office Consolidated Resource Management Plan (CRMP), the 2008 Programmatic EIS and Record of Decision (ROD) for Geothermal Resources Leasing in the Western United States (amendment to the CRMP), the Nevada and Northeastern California Greater Sage-Grouse Approved Resource Management Plan Amendment and ROD (amendment to the CRMP) and is consistent with applicable plans and policies of county, state, tribal and Federal agencies. This finding and conclusion is based on my consideration of the Council on Environmental Quality's (CEQ) criteria for significance (40 CFR 1508.27), both with regard to the context and the intensity of impacts described in the EA.

1.2. Context:

In 2008, ORNI 43 LLC (Ormat) began obtaining federal geothermal leases in the Tungsten Mountain area of Churchill County, Nevada. In 2011, the federal geothermal leases were unitized. Following acquisition of the federal geothermal leases and formation of the Unit, Ormat began conducting exploration activities in the Unit. Exploration activities in the Unit were previously evaluated in the Tungsten Mountain Geothermal Exploration Project Environmental Assessment (EA) # DOI-BLM-NV-C010–2012–0029–EA. A Finding of No Significant Impacts (FONSI) and Decision Record (DR) were signed on March 28, 2012 approving these exploration activities.

Geothermal exploration activities that were authorized under this Decision by the Bureau of Land Management (BLM) Carson City District, Stillwater Field Office (SFO) are current and ongoing within the Project Area. From these exploration activities, Ormat has acquired new information about the geothermal resource and is proposing to construct, operate and maintain the Tungsten Mountain Geothermal Development Project within Churchill County, Nevada (herein called the Proposed Action or the Project). Specifically the Proposed Action includes the construction, operation, maintenance and decommissioning of:

- Two geothermal power plants,
- Up to 24 geothermal production and injection wells.
- Up to 22 well pads,
- Geothermal fluid pipelines,
- Access roads.
- Approximately 17 miles of a generation tie (gen-tie) line, and
- Ancillary facilities.

The Project's gen-tie line would originate at the proposed substation within the Unit area, trend south parallel to the County Road and terminate at the proposed Alpine switching station in Section 33, T. 19 N., R. 37 E.

The geothermal portions of the Project are located within the Tungsten Mountain Geothermal Unit (NVN-88836X), which is comprised of federal geothermal leases N-85715, N- 86897, N-86898, N-88428, N-90744 and N-92480. The Tungsten Mountain Unit area encompasses approximately 5,840 acres of public lands in all or portions of Sections 13, 21-28 and 33-34, Township 21 North, Range 38 East (T. 21 N., R. 38 E.), Mount Diablo Baseline and Meridian in Churchill County, Nevada.

The total estimated area of surface disturbance required for the Proposed Action is approximately 106 acres permanent with a temporary disturbance of approximately 517 (gen-tie line option 1) or 530 (gen-tie line option 2) acres.

1.3. Intensity:

1. Impacts that may be both beneficial and adverse.

None of the environmental effects discussed in detail in the EA (refer to Chapter 3 Affected Environment and Environmental Consequences) are considered significant, nor do the effects exceed any known threshold of significance, either beneficial or adverse. The Proposed Action is a geothermal resource development project that proposes construction of two geothermal power plants, up to 24 geothermal production and injection well pads and wells, geothermal fluid pipelines, access roads, ancillary facilities and construction of approximately 17 miles of a gen-tie line. The Proposed Action is further described in the EA (refer to Chapter 2, Section 2.1 Proposed Action).

Impacts that would result from implementation of the Proposed Action are described in detail in Chapters 3 and 4 of the EA. Adverse impacts associated with implementation of the Proposed Action include the following:

- Impacts to Air Quality - fugitive dust from construction activities and travel on unpaved roads, atmospheric emissions of pentane from binary working fluid which are estimated to average approximately 12 tons/year (regulated through a Permit with the Nevada Department of Environmental Protection (NDEP).

- Impacts to Soils and Vegetation - temporary surface disturbance associated with the Proposed Action would be approximately 517 acres (if Option 1 is selected) or 530 acres (if Option 2 is selected) with approximately 106 acres of permanent surface disturbance that would not be reclaimed until the Project is decommissioned. These areas could have an increase in invasive, non-native plant species and are more susceptible to soil erosion. Additionally, soil would be compacted during construction activities due to heavy vehicle travel and heavy equipment use, which would serve to increase surface runoff and erosion potential. Special Status Plant Species, the Lahontan beardtongue and grizzlybear pricklypear were observed during the 2014 and 2015 biological surveys and have the potential to be impacted by proposed activities.

- Impacts to Wildlife – include the loss of foraging habitat, injury or mortality from collisions with structures and/or vehicles, displacement by noise from vehicles and equipment, and nest destruction from implementation of the Proposed Action. Habitat fragmentation and foraging habitat effects from Project development are expected to be greatest near the power plants, pipelines, and wells, as this is the area with the most concentrated surface disturbance. Avian species are susceptible to potential collisions with the gen-tie lines; especially with shield wires and guy wires, but also with power poles. These impacts are expected to affect individuals (causing conflict or death) but should not impact local or regional wildlife populations on the whole. Additional impacts from the transmission corridor construction would also be minimal because the majority of the corridor is proposed to be built along an existing road.

- Impacts to Livestock Grazing - Long term surface disturbance associated with the Project would be approximately 106 acres. The total 10,210 AUM within the allotment would be reduced by 3 AUM, or less than one percent of the AUM within the allotment. Fencing the reserve pits and power plant sites would prevent access by cattle to areas which might be harmful to them.

- Impacts to Water Resources – potential degradation in the quality of surface water by increasing erosion or sedimentation; potential for contamination of surface or groundwater due to materials and/or practices used, or by causing geothermal and non-geothermal mixing; decreased groundwater supply or interference with groundwater recharge.

- Impacts to Mineral Resources - Four mining claims within the Project Area could present surface conflicts as proposed Project components have the potential to overlap the active mining claims. Approximately 160,000 cubic yards of surfacing material may be needed for construction of the Project. A Mineral Materials permit would be processed for any aggregate pit located on public land managed by the BLM.

- Impacts to Visual Resources - The predominant vegetation is less than three feet in height and would not provide screening of the Project. The horizon line would be broken and discontiguous, thereby reducing contrasting impacts to the landscape lines and form since power lines and facilities would not protrude above the skyline. The Project would be extending existing visual disturbances and introducing additional elements into the landscape. However, non-natural features to line and form are already present from the existing utility poles and lines, man-made structures, fence lines, and dirt roads with exposed natural sediment. Drilling operations would be visible in the Project Area during site construction and intermittently over the life of the Project. Impacts to visual resources from drilling operations would primarily affect the elements of line and color. As drilling operations would occur around the clock, lighting from the drill rigs would affect nighttime darkness. Drilling operations would be temporary and short-term.

Beneficial impacts associated with implementation of the Proposed Action include the following:

- Impacts to Socio-economics - additional jobs and demands for goods and services would be expected in the local communities with implementation of this Project.

Construction of the geothermal portions of the Project would likely require a maximum of up to 50 workers; construction of the gen-tie line would require approximately 7 workers. Some of these workers would be recruited locally, though most would be specialized workers from outside the local area. A few of the workers (drilling or construction manager, geologist and mud engineer) are expected to live onsite in travel trailers during construction or drilling activities, but most workers would be expected to stay in local hotels, rental housing units or recreational vehicles and campgrounds, primarily in Cold Springs, Middlegate and/or Fallon, all in Churchill County, Nevada. Workers normally spend the per diem on motel accommodations or RV campground space rent, restaurants, groceries, gasoline, and entertainment. In addition, Ormat would likely rent or purchase some portion of the equipment and supplies from local suppliers, primarily in Cold Springs, Middlegate and/or Fallon. Once operating, the Project would have a staff of approximately 20 employees.

- Once the renewable energy plants are in operation, they would contribute to meeting Nevada's Renewable Portfolio Standard.

The impacts resulting from implementation of the Proposed Action (as described in Chapter 2 of the EA) would be lessened by incorporation of the Adopted Protection Measures that have been proposed by Ormat (Section 2.1.11 of the EA), Special Lease Stipulations attached to leases NVN085715, NVN086897, NVN086898, NVN088428, and NVN090744, Required Design Features (as described in Appendix C of the EA), Mitigation Measures proposed in the EA (refer to Chapter 3 and 4), and the Conditions of Approval attached to the permits. Additionally, following geothermal activities, the restoration and reclamation of native vegetation, would further reduce adverse impacts to the human environment.

2. The degree to which the Proposed Action affects public health or safety.

The Proposed Action includes the construction and operation of two geothermal power plants, geothermal production and injection well pads and wells, geothermal fluid pipelines, access roads, a gen-tie line and ancillary facilities within the existing Tungsten Mountain Geothermal Unit in Churchill County, Nevada as described and analyzed in EA# DOI-BLM-NV-C010-2016-0016-EA. Under the Proposed Action, there would be up to 50 workers during construction and 20 employed full-time during operation. It is estimated that 1-2 employees would be onsite at any given time once the Project is operational. Measures are in place to ensure their health and safety during operations. The nearest community to the Project Area is Austin, Nevada which is approximately 36 miles west of the Project Area. There are no developed recreation areas in the vicinity of the Project Area. It is unlikely that there would be any measurable impacts to the general public's health or safety.

3. Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.

A literature review and Class III cultural resource inventory of approximately 1,192 acres of the Project Area in Churchill County, Nevada were conducted. This acreage included the 994 acres originally proposed, an additional 179 acre addendum, as well as an additional 19 acres to re-route the Area of Potential Effect around two historic graves. Fieldwork for this Project was conducted between April and July of 2014.

The inventory resulted in the identification of 51 new sites, updated three previously recorded sites, performed revisits on seven previously recorded sites and identified 49 isolated finds. Three of the newly recorded sites have been recommended eligible for inclusion in the National Register of Historic Places (NRHP). All three of the previously recorded sites were recommended not eligible for inclusion in the NRHP by the parties that first recorded them. While all of these sites were expanded upon, the additional information gained from the current updates does not warrant a change in the previously recommended eligibility justifications. All seven of the revisited sites that did not require updating are recommended not eligible for inclusion in the NRHP. All of the isolated finds, with the exception of the historical grave, are categorically not eligible for inclusion in the NRHP per the State Protocol Agreement between the BLM and Nevada State Historic Preservation Office (2012: Appendix E). Re-routes of the gen-tie line were built into the design to avoid the three eligible sites by a distance of at least 30 meters. Additionally, due to changes in the Project Plan of Utilization, the proposed Project would no longer potentially impact the architectural resource and refuse scatter on private lands in the vicinity. When initial construction is close to the buffered areas, one archaeological monitor and one tribal monitor would be present to ensure that eligible and unevaluated cultural sites are not disturbed.

There are no park lands, prime farmlands, wetlands, wild and scenic rivers or ecologically critical areas in or near the proposed Project activities. The northwest boundary of the Project Area borders a Wilderness Study Area, all Project activities will remain outside of the Wilderness Study Area.

4. The degree to which the effects on the quality of the human environment are likely to be controversial.

The EA was scoped internally by BLM resource specialists in July 2014 and again in June 2015. BLM resource specialists identified the supplemental authorities and other resources and uses to be addressed in the EA. The EA was also scoped externally to the Fallon Paiute-Shoshone Tribe regarding the possibility of Native American Religious Concerns or any other impacts that could result from the Proposed Action. This scoping process is detailed in Section 3.4.3 of the Final EA (Native American Religious Concerns).

The following specific issues and resources in relation to the Proposed Action were identified as present/potentially affected and carried forward for analysis in the EA: Air Quality, Cultural Resources, Migratory Birds, Native American Religious Concerns, Water Quality (surface/ground), Wilderness/Wilderness Study Areas. Special Status Species, General Wildlife, Land Use Authorizations, Livestock Grazing, Minerals, Socioeconomics, Soils, Vegetation, Visual Resources and Wild Horses and Burros.

The EA was made available for a 30-day public review and comment period on December 22, 2015 until January 21, 2016. The EA was made available by hard copy at the Carson City District Office and electronically on the District webpage at: http://1.usa.gov/1QWnTTL. A notification of availability of the EA was sent via email and hard copy letter to interested parties including the State Clearinghouse who shared with 95 additional Federal, State, and Local Government agencies. Additionally a press release was prepared and shared with local media outlets during the comment period.

Coordination with the Fallon Paiute-Shoshone Tribe was initiated in 2011 during the proposal

for geothermal exploration activities in the Tungsten Mountain Project Area and with the current proposal in 2015. Face-to-face consultation meetings took place in April 2011, March 2015, April 2015, June 2015, September 2015 and November 2015. Site visits to the Project location were also conducted in 2011 and 2015 with the Fallon Paiute-Shoshone Tribe's Cultural Committee Coordinators and the Cultural Committee Chair. Consultation with the tribe is ongoing but to date no traditional cultural properties or sacred sites have been identified within the Project Area. Ongoing consultation could result in new information and additional mitigation measures.

During the comment period, 8 comment submissions were received from State and Federal Government agencies. The Federal Government agencies were the US Environmental Protection Agency and the Navy (Naval Air Station Fallon). State agencies that commented were the Nevada State Land Use Planning Agency, the Nevada State Historic Preservation Office, the Nevada Division of Water Resources, the Nevada Department of Wildlife, the Nevada Division of Environmental Protection - Bureau of Safe Drinking Water and the Nevada Division of Environmental Protection - Bureau of Air Pollution Control. All comments received were reviewed, considered and responded to by the BLM Stillwater Field Office, Carson City District.

Appendix E of the Final EA describes the comments received and the BLMs responses to those comments, including whether or not the EA was revised or updated per the comments and where those changes can be found in the document. Changes to the Final EA based on the comments received were not considered substantial, nor did they change the analysis but served to provide clarification as appropriate.

5. The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.

The Proposed Action is not unique or unusual. The action described in Chapter 2 of the EA is development of a geothermal resource. There are no predicted effects on the human environment that are considered highly uncertain or involve unique or unknown risks. There are several geothermal power plants of this type currently in operation within the BLM Carson City District's jurisdiction. Public comment and/or concern have been minimal for this Project.

6. The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.

As exploration advances and additional development of energy generation facilities is proposed on a geothermal lease, an environmental analysis may be warranted to assess impacts resulting from these types of projects. The progression of the Project from leasing to exploration to development is customary and expected. This action will not establish a precedent for future actions within the area, and all future proposed actions within the Project Area will be analyzed under a site-specific environmental analysis and analyzed on its own merits.

7. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts.

Resource values, as identified in this EA, were evaluated for cumulative impacts (Refer to Chapter 4 of the EA). The cumulative impacts resulting from implementation of the

Proposed Action, with incorporation of special lease stipulations attached to leases NVN085715, NVN086897, NVN086898, NVN088428, and NVN090744, the Adopted Protection Measures (built into the Proposed Action, described Section 2.1.11 of the EA), Required Design Features (as described in Appendix C of the EA), Mitigation Measures identified in the EA (Chapters 3 and 4), and the Conditions of Approval attached to the permits. Additionally, following utilization activities, the restoration and reclamation of native vegetation would further reduce any cumulative impacts from the Proposed Action activities. It has been determined that cumulative impacts would be negligible for the proposed Project for all resources (refer to analysis in Chapter 4 of the EA).

Subsequent actions for geothermal resource exploration and/or development within the area and vicinity would be evaluated for cumulative impacts in associated environmental analysis that may be warranted and would be addressed through mitigation of the proposed future action and Conditions of Approval.

8. The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the NRHP or may cause loss or destruction of significant scientific, cultural, or historical resources.

As described in the EA (refer to Chapter 3), the Project would not adversely affect districts, sites, highways, structures, or other objects listed in or eligible for listing in the NRHP, nor will it cause loss or destruction of significant scientific, cultural, or historical resources. Coordination during the inventory resulted in re-routes of the proposed gen-tie line to avoid impacting two sites determined eligible for listing on the NRHP. These re-routes avoid the two historic properties by a distance of at least 30 meters. Additionally, due to changes in the Project Plan of Utilization, the proposed Project would no longer potentially impact the third eligible site.

9. The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the ESA of 1973.

As described in the EA (Refer to Chapter 3), there are no plant or animal species that have been Federally listed as endangered or threatened, or proposed for listing species under the Endangered Species Act known to occur within the Project Area and its associated area of influence.

The Greater Sage-Grouse (GRSG) was a candidate for listing. However, on September 21, 2015, the Record of Decision and Approved Resource Management Plan Amendments for the Great Basin Region, including the GRSG Sub-Regions of: Idaho and Southwestern Montana, Nevada and Northeastern California, Oregon, and Utah (USDI, BLM 2015a) were signed on September 21, 2015 by the Director of the BLM and the Assistant Secretary of Land and Minerals Management. A determination was made by the USFWS that the GRSG does not warrant protection under the Endangered Species Act. However, as the BLM considers the GRSG a special status species, it is analyzed in the EA and Required Design Features have been applied to the Proposed Action (Refer to Chapters 3 and 4 and Appendix C of the EA).

Any future exploration and development actions would be evaluated in a separate, site-specific environmental analysis on its own merits.

10. Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.

As described in the EA, the Proposed Action does not violate any known Federal, State, or local law or requirement imposed for protection of the environment.

1.4. Signed:

Teresa J. Knutson
Field Manager
Stillwater Field Office

[Date] 3/25/2016

EXHIBIT 9

LVN
Lahontan Valley News
Fallon Eagle Standard

P.O. Box 1888 Carson City, NV 89702
(775) 881-1201 FAX: (775) 887-2408

Customer Number: # 1072966

Legal Account
Holland & Hart
5441 Kietzke Lane, Second Floor
Reno, NV 89511
Attn: Caren Adkins

Kristin Ritter says:
That (s)he is a legal clerk of the LAHONTAN VALLEY NEWS, a newspaper published Wednesday, Friday, Sunday at Fallon, in the State of Nevada.

PUC Tungsten Project

Ad # 0000031191

of which a copy is hereto attached, was published in said newspaper for the full required period of **1 time** commencing on **October 14, 2016,** and ending on **October 14, 2016**, all days inclusive.

Signed:

Date	Amount	Credit	Balance
10/14/16	$168.63	$ 0.00	$168.63

Proof and Statement of Publication

BEFORE THE PUBLIC UTILITIES COMMISSION OF NEVADA
NOTICE OF APPLICATION FOR A PERMIT TO CONSTRUCT A UTILITY FACILITY UNDER THE UTILITY ENVIRONMENTAL PROTECTION ACT

ORNI 43 LLC ("ORNI 43") will submit with the Public Utilities Commission of Nevada (the "Commission"), pursuant to Nevada Revised Statutes 704.820 through 900, inclusive, and Nevada Administrative Code 703.415 through 427, inclusive, known as the Nevada Utility Environmental Protection Act ("UEPA"), an application for a permit to construct a utility facility consisting of a 230 kV transmission line and associated facilities, including a 24 MW geothermal energy generating facility, well field, substation improvements, and associated generating and transmission improvements (collectively, the "Project" or "Tungsten Project"), to be located within the Churchill County, Nevada (the "Application").

The Project consists of the development, construction, operation, and maintenance of an approximately 16.5 mile long 230 kV steel monopole generation-tie transmission line and dedicated communication system and fiber optic line connecting a 24 MW geothermal energy generating facility and terminating at the proposed Alpine Substation to be owned by Sierra Pacific Power Company. The Project is to be developed primarily on federal lands managed by the Bureau of Land Management ("BLM") within the Tungsten Mountain Geothermal Area in eastern Churchill County, approximately 55 miles east-northeast of Fallon, and north of Highway 50.

Notice is hereby given to persons residing in the municipalities in which any portion of the new transmission line will be located and constructed. ORNI 43 will request a permit to construct the new 230 kV transmission line and associated communications system and fiber optic line connecting the a 24 MW geothermal energy generating facility and terminating at the proposed Alpine Substation.

The contents of the Application to be submitted to the Commission for the transmission line and related facilities will include:

(1) A description and location of the proposed transmission line and related facilities requiring a permit to construct from the PUCN;
(2) A general description of the proposed transmission line, including the size and nature of the transmission line and the natural resources that will be used during construction and operation; and
(3) A summary of any studies which have been made regarding the environmental impact of the proposed transmission line and related facilities.

A copy of the Application will be available on the Commission's website after filing. Additional information about the UEPA process and a person's right to participate in the process can be found in Chapters 703 and 704 of the Nevada Revised Statutes and Nevada Administrative Code. Protests and written comments regarding the granting of a UEPA Permit must be filed with the Commission as provided by law.

Pub: October 14, 2016 **Ad#0000031191**